THE RUBBER AGE AND TIRE NEWS

MARCH 25, 1920 VOL. VI. NO. 12

Member of the Associated Business Papers, Inc.

INDEX TO CONTENTS

The Goodyear Rubber Plantation in Sumatra..... 543
The Testing of Crude Rubber..... 545
Simple Methods for Determining the Quality of Rubber..... 548
The Softening Point of Asphaltum..... 549
Public Holidays in April..... 550
The Molding of Pneumatic Tire Covers..... 551
News of the Mid-West Rubber Association..... 552
Rubber Production on the Pacific Coast..... 553
Oak Plant Destroyed by Fire..... 553
Tire Prices Advanced..... 554
McGraw Business Increases..... 554
Akron Stock Prices..... 554
Latex Tire to Begin Production..... 555
International to Increase Stock..... 555
India to Double Output..... 555
Rubber Division to Meet..... 556
Lee Profits Increase..... 556
United States Promotions..... 557
Mauthe With Syracuse..... 557
MARKETS:
Manufactured Rubber Goods..... 559
Cottons, Yarns and Fabrics..... 559
Chemicals and Compounding Materials..... 560
Crude Rubber..... 561
Scrap Rubber..... 561
American Rubber Patents..... 562

THE GARDNER-MOFFAT COMPANY, Inc., *Publisher*

HARTFORD BUILDING, UNION SQUARE

22 EAST 17th STREET, NEW YORK

WESTERN REPRESENTATIVE—F. H. VAN HORN, 828 NATIONAL CITY BLDG., CLEVELAND, OHIO

SUBSCRIPTION PRICE: TWO DOLLARS PER YEAR, SINGLE COPIES TEN CENTS. CANADA: TWO DOLLARS AND A HALF A YEAR. FOREIGN: THREE DOLLARS A YEAR.

COPYRIGHT, 1920, BY THE GARDNER-MOFFAT COMPANY, INC., PUBLISHERS.

ISSUED ON THE TENTH AND TWENTY-FIFTH OF EACH MONTH. FORMS CLOSE FIVE DAYS PREVIOUSLY. ENTERED AS SECOND-CLASS MATTER MARCH 26, 1917, AT THE POST OFFICE AT NEW YORK, N. Y., UNDER THE ACT OF MARCH 3, 1879.

TRENTON N.J., U.S.A. **ESSEX RUBBER COMPANY, Inc.** TRENTON N.J., U.S.A.

"ERCO" SOLES
"ESSEX" RUBBER HEELS
"TITE-EDGE" RUBBER HEELS

MOLDED SPECIALTIES

Trade Mark

AUTOMOBILE ACCESSORIES

INNER TUBES, CEMENTS, ETC.

MOLDED RUBBER GOODS

COMPRESSED AND LIGHT
CARBON BLACK

1890 L.H.B.CO.

CARBONATE AND OXIDE
MAGNESIA

L. H. **BUTCHER** CO., Inc.

ESTABLISHED AT SAN FRANCISCO 1890

NEW YORK SAN FRANCISCO LOS ANGELES SEATTLE AKRON

AKRON ADVERTISING AGENCY

Announcement

¶ We take pleasure in announcing the election of EDWARD S. BABCOX as vice-president of our organization.

¶ Mr. Babcox is well and favorably known throughout the rubber industry. For six years he was advertising manager of the Firestone Tire & Rubber Company and later sales and advertising manager of The Rubber Products Company.

¶ The addition of Mr. Babcox to our staff is in keeping with our policy to make this agency the best qualified organization in the country to handle the advertising of rubber products.

The Akron Advertising Agency Company

SUITES 212 *to* 222

Central Savings & Trust Building

Akron, Ohio

L. D. GARDNER, PRESIDENT
W. D. MOFFAT, VICE-PRESIDENT
W. I. SEAMAN, TREASURER

THE RUBBER AGE AND TIRE NEWS

H. B. SEYMOUR, EDITOR
G. M. SANGSTER, JR., MANAGING EDITOR
H. M. WILLIAMS, GENERAL MANAGER

Vol. VI | March 25, 1920 | No. 12

The Goodyear Rubber Plantation in Sumatra

The insatiable demand of modern industry has proved too swift for the slow processes of Mother Nature in many instances and accordingly the unbelieveable force of the human mind, aided by its inventive faculties and also by mechanical agencies fashioned by his hand, have been brought into play. Speed, speed and more speed! Mills and factories must never stop—they must operate ceaselessly. The earth must produce in increasing quantity—aided by the hand of man. Commerce has extended its far-reaching hand and has linked continents by the use of swift ships, airships and airplanes; has tapped inaccessible natural resources by the aid of railroads and has made deserts bloom by irrigation.

The latest sweep of modern industry has been to clear the virgin jungle, forcing it to produce rubber for human needs and pleasures instead of sheltering the creatures of the wild. It seems a far cry from the jungle to the automobile tire, but if it were not for the cultivated rubber produced where tangled undergrowth and giant trees existed but twenty years ago, motor transportation would never have made such great strides.

Two decades ago "experts" declared if the automobile industry were devolped much further, it would be necessary to find a substitute for rubber. They were sadly in error. More than eighty per cent of the 700,000 tons of rubber produced annually is cultivated, allowing its use for tires and a thousand new purposes never dreamed of in 1900. Cultivated rubber is now obtained from the Straits Settlements, India, Ceylon, the Malayan peninsula, the Dutch East Indies, Borneo and Indo-China.

The Cultivation of Rubber

Cultivation of rubber was first attempted in 1876, when seeds of the Para tree, known as the *Hevea Brasiliensis*, were planted in Kew Gardens in London and the next year introduced into Ceylon and later into the Federated Malay States, Straits Settlements, Southern India, Sumatra, Java and Borneo. In 1900 the first trees of the Oriental plantations first came into actual bearing condition, with a production of four tons of rubber. In 1907 production of cultivated rubber had grown to 1,000 tons and in another decade had reached 200,000 tons. Meanwhile the production of wild rubber had remained stationary at 40,000 tons a year.

It was 1916 before the Goodyear Tire & Rubber Company decided to assure future supplies of crude rubber by starting cultivation in Sumatra. The project was placed in the hands of William Vaughan, known as an authority on rubber cultivation, and his achievements with the last few years have been little short of miraculous. With the help of native labor, thousands of acres of virgin jungle have been cleared, miles of modern roads have been built until now a large portion of the 20,000 acre tract has the appearance of a city park. Modern working places have been erected to carry on the work of preparing the rubber for shipment and proper quarters furnished for the 7,500 natives who are employed on the plantation.

The great popularity of plantation rubber is accounted for by the superior condition in which it is received in this country. Wild rubber comes on the market with from 10 to 50 per cent of moisture and foreign substances in its composition. The difference in freight cost, shrinkage and ease of handling at the factory are matters of great importance to the manufacturer. The Far Eastern cultivated product is exceptionally uniform, due to the scientific methods of coagulation and preparation and in addition it has as great tensile strength as the finest grades of Para.

NATIVE PRUNING YOUNG RUBBER TREES

When a car owner sits comfortably in his luxurious car, speeding over roads of every character with little inconvenience, little does he realize the processes to which the rubber in his tires have been subjected to give the resiliency and wearing qualities that make motoring one of the greatest pleasures of the day.

The rubber tree bears a seed about the size of a hickory nut. These are gathered by natives and planted in nursery beds, where at the end of six months, the top of the seedling

is cut off, or "stumped." This allows several branches to spring out at the cut and causes the shoots to grow more rapidly, at the same time permitting the seedling to become hardy enough to withstand the attacks of the white ants. In ground that has been burned clear of jungle trees and underbrush, the young trees are planted twenty feet apart, allowing about 100 trees to the acre. The earth is carefully kept free of weeds and grass, so that all nutrition will go to increase the growth of the trees.

In order to explain the extreme care necessary in tapping the trees, some idea of their construction is needed. The two

TYPES OF NATIVES EMPLOYED ON PLANTATION

most interesting parts are the cambium and the cortex. The cortex lies just beneath the outer, corky bark, has a slightly pinkish tint and is about three-sixteenths of an inch in thickness. It is here that the latex cells are located. They run vertically up and down the tree and in tapping, the knife cut is made across these cells to cause the latex, or milky white sap, to exude. The cambium is a thin, shiny network, so thin as to be hardly visible, lying between the wood and cortex. Its function is to produce latex cells on the outside and wood fibre on the inside. In tapping, great care must be exercised not to cut into the cambium.

The tree is cut through the outer bark to the cortex, and almost up to the cambium, a thin shaving being removed. Immediately the latex issues forth as a thick, milky fluid, much in the same manner that a human being bleeds. The bleeding continues for several hours, the latex trickling down a groove in the trunk of the tree, where it is collected in a glass or a porcelain cup. After a while the latex begins to run more slowly until it finally coagulates and ceases to flow. Then the tapper strips the clot off the cut and makes a further incision.

BUILDINGS ON RUBBER PLANTATION

Tapping is done early in the morning because the burning, tropical sun has a coagulating effect. The tappers muster in front of the manager's bungalow about five o'clock, roll call is taken and the natives start on their rounds. Each coolie takes a basket, into which he puts the strippings of latex or clot from the previous day's cut. By nine o'clock in the morning each tapper has completed his first round and done all the tapping. He then makes another round and collects in a pail the latex in the cups placed under the incision in each tree.

About three-fourths of an ordinary size cupful is the amount of latex yielded by each tree a day. After all the latex has been collected, it is taken to the factory and poured through a cloth strainer into a large "settling" tank. At the same time the bark shavings are dumped into a "soaking" tank. At noon the coolie has finished his work for the day.

Pouring the latex through a sieve separates it from particles of bark that may have fallen into the cup during the draining process, and also isolates any latex that has formed into lumps. The strained fluid is allowed to settle, after which the top is skimmed, freeing the surface from bubbles.

When the latex is strained and skimmed, it is ready for coagulation. This is accomplished by adding acetic acid, the phenomenon being similar to the souring of milk. The fluid is then stirred with wooden paddles and allowed to stand over night. In the morning rubber is found floating on top of the tank. It is a tough elastic mass, white in color.

This product is now ready to be made into crepe, which may be described as crinkly sheets of rubber. Cut into pieces of from ten to fifteen pounds, the rubber is put through washing machines coming out in long sheets, which are placed over wooden bars to dry. In the drying process the color changes from white to a beautiful yellow. Some of the rubber sheets are smoked similar to the way in which hams are treated, making the rubber a dark brown color.

The crepe sheets are then packed for shipment and after a journey of 10,000 miles, are ready for manufacture into

CLEARING JUNGLE FOR PLANTING RUBBER TREES

tires for heavy duty in commercial pursuits or to transport milady on her round of pleasure.

The "Romance of Rubber" is one of the most fascinating chapters of industry today. Wresting of the virgin jungle from Nature's grip to assure the future needs of the world in rubber products constitutes one of the crowning achievements of mankind.

Reclaimed Rubber in Germany

Lately, the German reclaimers have succeeded in developing a very complete process for the production of a reclaimed rubber which is free from metal. In carrying out this process the rubber scrap is coarsely ground and dissolved in hot benzine or benzol under pressure in a very strong vessel. The rubber solution obtained, is freed from the undissolved fabric, metal particles, etc., as well as certain mineral fillers and adhering sand by suitable filtration. A complete separation of the mineral colors and fillers contained in the rubber scrap is not generally necessary. A part of the mineral fillers is so finely divided in the colloidal solution that they pass through the filter with the rubber solution. The solvent is separated from the filtered rubber solution by steam distillation and used again. The moist sticky mass which remains is washed on the wash rolls and dried in the usual manner as with crude rubber and is then made uniform by milling on hot rolls.

The Testing of Crude Rubber*

This report is divided into three parts: 1. Introduction; II. Latex-research and valuation of crude rubber by its external appearance, and III. Chemical Research on Crude Rubber.

The introduction gives the foundation and the functions of the rubber testing bureau at Delft. In the year 1910 there was established at Delft "A Government Rubber Testing Bureau for Informing the Rubber Trade and the Rubber Industry." This bureau was to deal with the problems of the rubber industry and the rubber trade in the broadest sense of the word and to give technical advice and information and also to further the development of the rubber industry as a whole.

The first researches were on samples of crude plantation rubber and a few samples of wild rubber, gutta percha and balata. Especially interesting was the research carried out on eighty-four samples of used cable cover which were supposed to pass the so-called normal standards. The result was that only twenty passed. The Bureau has been busy testing vulcanized rubber as well as fillers and substitutes.

By order of the commission at the meeting of the International Rubber Congress in Batavia in 1914 researches were performed on 137 samples of first latex crude rubber taken from the rubber markets at Amsterdam, London, Rotterdam and Antwerp. With these tests as a basis the Bureau came to the conclusion that the "inherent" properties of a crude rubber, depend on its behavior on vulcanization and that first latex rubber as a class has no purely empirical value, but that the technical scientific testing places a value on the sample which is nearly equivalent to the usual broker's valuation as now applied. The Bureau has had considerable difficulty in perfecting simple testing methods but this deficiency has, to a certain degree, been overcome.

Soon after the outbreak of the war the interest in the activities of the Bureau entirely disappeared. However, the exhibitions committee of the Rubber Exhibition at Batavia in 1914 supplied the Bureau with 278 samples of crude rubber for our opinions on the same. These experiments were very important for the determination of simple testing methods.

Among the planters in the Dutch Indies the work of the Bureau has created much interest, especially the recommendation of the new method of preparing rubber latex. There followed the establishment of a research station in Buitenzorg, Batavia, and in West Java and the establishment of a rubber division of the Deli research station was considered. The activities of the Bureau are increasing and it is hoped that after the return of normal conditions the value of the rubber-testing bureau will become known to a greater degree.

In the reports we intend to leave out purely scientific researches, regarding it as better to bring about technical working processes in the industry. This bureau does not conduct pure scientific research however, the researches are carried out in a strictly scientific manner. Purely scientific research very seldom supplies the industry with results which are of much practical value. The Bureau desires at all times to answer questions and to solve problems, which are of a practical nature, from a technical standpoint.

Latex Research and Valuation of Crude Rubber

Do the rubber globules in the latex have a lower degree of polymerisation than in the coagulated crude rubber? According to Weber (1903) the latex of *Castilloa elastica* contains no rubber, as rubber, but only terpene-like bodies which are polymerized by the coagulation. Opposed to this view are Jong, Tromp de Haas (1904), Harries (1904) as well as Hinricksen and Kindscher (1909) who agree that the rubber in the latex exists in a high degree of dispersion. The researches carried out at the Delft Rubber Testing Bureau show that rubber is not dissolved out of the latex by ordinary agitation with benzol. On the contrary Van Heurn succeeded in depositing a solid mass (solid emulsion) from dialyzed latex by carrying on strong agitation with benzol, which almost entirely dissolved in an excess of benzol and behaved as a rubber solution from the treated latex. The viscosity number of this rubber solution was 81.5. By coagulating this same latex with acetic acid rubber was obtained which was worked up mechanically and treated with benzol. This shows very little solubility and the less the mechanical treatment the less the solubility. The viscosity, when using the Oswald apparatus was found to be only 29.62 and 64.7. This shows that the viscosity number is a very good measure of the degree of polymerization of the rubber which can be dissolved from the latex with benzol without coagulation. The original condition of the rubber molecule in the latex is of great importance in determining the quality of the crude rubber.

Determination of Rubber Content of Latex

According to the views of the Bureau an exact determination of the rubber contained in the latex can be obtained by the evaporation of a weighed amount of latex and a determination of the rubber content of the dried mass by the indirect method. The rubber content is calculated as follows: the sum of the moisture, resins and insoluble, in per cent, is subtracted from 100 giving the rubber.

The direct determination of the rubber in the latex is a matter of great importance for the planter. By means of this the planter has a check on the daily yields, the tappings, the working up of the latex, etc. There are at present three methods for this direct determination. Spindle measure, coagulating a sample, evaporation of a measured amount of latex, and the weight of the dry mass minus a determined percentage for the non-rubber substances. The first two processes necessitate a large quantity of latex, the coagulation of a sample is troublesome and takes considerable time if the rubber is to be weighed dry. The last process, suggested by Kerbosch, is based on the assumption that the rubber content is obtained approximately by deducting nine per cent from the dried residue of the latex. This figure was obtained after coagulating with acetic acid, washing and drying to constant weight. This process necessitates a small laboratory and the carrying out of accurate weighings. Its correctness has been proven by numerous series of researches with the latices of various origins and has been found free from objections.

An apparatus has been devised by G. van Iterson, Jr., which permits of a direct reading of the rubber content of the latex. The apparatus checks itself, but it is fairly expensive and requires very careful manipulation. A drop of the latex is placed on a round black ebonite disc, this is brought to a uniform dilution and spread out in a uniform layer by means of a special device. It is then compared to a gray sample color. by the use of an adjusting screen both colors are brought into conformity and by means of a numerical scale the rubber content is read off directly. The Delft Bureau using this device on average or low dilution of latices from Buitenzorg has obtained good results. On the contrary by using undiluted or only slightly diluted latices low values were obtained. This "optical method" must be essentially simplified if it is to be made use of on the plantations.

* Report of the Netherlands Government Rubber Testing Bureau at Delft.

In addition to the rubber there is found in the latex principally, inorganic substances, nitrogenous substances (proteins, albumins), sugar-like bodies and resins. These substances go entirely into the crude rubber if the latex is dried up by heating and partially (about six per cent) by coagulation by means of acid.

An important role is ascribed to these accompanying substances in the vulcanizing process. The latex contains as inorganic substances especially sulfates and phosphates, less chlorides and exalates, of calcium, magnesium, and iron. The nitrogenous substances consist of proteins or glucoproteids which can be partially separated by dialysis. Kerbosch found a small amount of hydrocyanic acid in the latex of *Hevea*. The most important nitrogen-free constituents of the latex are the sugar substances and acetaldehyde (according to Kerbosch). The researches of the Delft Bureau have shown that the crude rubber obtained by the evaporation of the latex, in which therefore the soluble latex constituents are present, shows considerable more acetone soluble than in the washed product from coagulated latex. Numerous researches on cultivated rubber from the Indies substantiate these results.

Processes for the Preparation of Crude Rubber

In the Bureau there were a number of rubber samples which were prepared from first quality Hevea latex by various processes. Research work on these was done by Dekker. The latex was preserved after being taken from trees which were planted in the year 1898. The following table shows the results of these researches:

Sample. No.	Moisture. %	Ash. %	Proteins. %	Impurities, Petrol Method. %	Resins. %	Water Soluble Resin Calc. on the rubber. %	Viscosity.
1.....	3.10	0.70	3.50	4.20	3.00	0.80	52.5
2.....	0.50	0.35	3.32	3.65	2.40	0.10	54.9
3.....	2.35	1.60	4.20	Not det.	3.20	Not det.	Not det.
4.....	1.80	0.45	3.35	4.15	2.15	0.20	34.4
5.....	...	...	...	...	2.00	Error.	59.8
6.....	...	...	...	...	1.85	Error.	44.1
7.....	...	...	...	...	1.90	Error.	63.5

The samples were produced from the preserved latex as follows:

No. 1. Latex, crude rubber washed with luke-warm water and dried in the air in crepe form.

No. 2. Latex warmed gently and coagulated with acetic acid, crude rubber washed with luke-warm water and dried in crepe form in the air.

No. 3. Same as No. 1, only the crude rubber was dried in a vacuum.

No. 4. The latex dialysed four days then evaporated and the crude rubber treated as in No. 1.

No. 5. The latex dialysed four days then coagulated with acetic acid and treated as in No. 1.

No. 6. Latex dialysed ten days, evaporated and the crude rubber washed with luke-warm water and dried in the air in crepe form.

No. 7. Dialysed same as No. 6, coagulated warm with acetic acid and treated the same as No. 6.

From the tabulated values the following is shown:

The resin content drops off in the dialysed samples and is least in the latex coagulated with acid. Perhaps the ammonia used to preserve the latex may have partially saponified the rubber resins. The resin content of the crude rubber obtained by evaporation is higher than in those obtained by acid coagulation. The results found show clearly that the presence of soluble latex constituents influence the resin determination. The ash content was raised by the presence of soluble constituents. Rubber with soluble latex constituents shows a high investure content and after drying the same at about 100°C for several hours it will take up about two per cent of moisture from the air. An appreciable part of the rubber obtained by the evaporation of the latices is soluble in water. The viscosity of the products obtained by evaporation is lower than for those obtained by coagulating the rubber. If the soluble part of the latex is removed then the viscosity of the evaporated samples is considerably lowered and on the other hand the acid coagulated is increased.

In practice it is important to bear in mind that owing to the serum constituents the yield of crude rubber which is prepared by the evaporation process is greater than that contained by coagulation. Dekker obtained the following figures from the same latex; by evaporation 32.4 percent by coagulation, 29.0 percent of dry substance. Further research furnishes us with proof that rubber obtained by the evaporation process shows a greater vulcanization velocity than that obtained by the coagulation process. Perhaps the soluble substances of the rubber act as catalysors in the vulcanizing process. According to van Rossem, who carried out his researches on cultivated Hevea rubber, there is no direct relationship between the nitrogen content of a rubber and the vulcanization. However, Beadle and Stevens claim the nitrogenous bodies to be accelerators of vulcanization. However, there appears to be a slight relationship between the acetone extract and the vulcanization velocity. According to Kerbosch the rubber prepared by the evaporation process is less oxidized by the air than one prepared by the coagulating process, probably the influence of the heat plays a part in this case.

The Bureau tested some samples of crude rubber which were prepared by the electrical process. This rubber showed very high viscosity, very great vulcanization velocity and remarkable mechanical properties after vulcanization. Samples for further tests were not at hand.

Judging Crude Rubber by Its External Appearance

The question of whether crude rubber shows by its external appearance, its quality, and its condition after its vulcanization is very important for the valuation of the crude product. The Bureau holds the view that a judgment of the value of a rubber by its external appearance as it comes in the trade is of no value. A separation may be made in regards quality according to its external appearance. Granting that you have samples of exactly the same external appearance throughout is no guarantee that the samples are of the same quality. The Bureau has carried out an exhaustive research on this point on different kinds of rubber. The external appearance of a given kind of rubber (as sheet, crepe, block), as a rule, furnishes no indication as to the behavior of the rubber in or after vulcanization. Therefore it shows none of the important properties for the use of the rubber. The valuation of crude rubbers by a pulling test with the hands shows a degree of success under certain conditions, but frequently leads to false conclusions, and consequently can be used only to distinguish type differences and then only with considerable reservation. The action of artificial catalysus on the vulcanization can be determined only by test samples; the exterior appearance plays no part in this case. The addition of a considerable quantity of sodium bisulfate (as a bleaching agent) to the latex has no influence on the external properties of the crude rubber. Pale bleached rubber produces vulcanizates which cannot be distinguished in external appearances from the unbleached product after vulcanization.

Spots on Crude Rubber

Crude rubber effected with spots is now seldom found on the market due to the careful working up of the latex. Sheets frequently show a non-uniform structure and are spotted. The spots are probably not due to microbes but may be traced to different degrees of polymerisation of the product. Trade samples are occasionally found which have surface mold and bacteria. Certain microorganisms have in general an injurious effect on crude rubber. It is therefore apparent that in cultivating crude rubber it must be quickly and carefully dried. If the rubber molds after its preparation, its value in the market is lowered.

Transparent crude rubber has been regarded often with distrust. It contains so much moisture that it lessens its quality. Unworked Hevea-sheets which were stretched consider-

ably and shrunk up by heat, show likewise transparency (according to van Heura).

According to the researches of this bureau we can say that the transparent rubber is just as good as the opaque.

Whether transparent or opaque the rubber molecule appears to be formed in the usual manner.

Chemical Research on Crude Rubber

Wild rubber generally contains many impurities and is of changing quality. Researches on this have been going on for some time. Cultivated rubber is pure and uniform in quality, especially Hevea plantation rubber, which shows very uniform results on moisture, resin, ash, nitrogen content, etc. Therefore chemical research work on cultivated rubber cannot be dispensed with. Systematically conducted tests will clear up the following important points: Does there exist any relationship between the chemical values obtained for a crude rubber and the properties of the rubber after vulcanization? How do you explain the values found for an "abnormal" analysis, large amount of impurities or working errors? We shall undertake continually chemical research on crude rubber obtained by evaporation because this kind contains much non-rubber material. In this class belong the true Para sorts and many plantation rubbers. The chemical analysis of crude rubber has been considerably expanded. It includes a determination of the content of moisture, ash, resin, protein, as well testing the insoluble, the water extract and the degree of acid.

Moisture Content

In the Bureau the following process is used: 3-5 grams of a finely cut up sample are dried immediately in a drying oven to constant weight. As examples the following moisture contents were found: Hevea sheets, 35 samples, maximum, 1.08 percent, minimum, 0.30 percent, average, 0.61 percent; Hevea crepe, 102 samples, maximum, 0.90 percent, minimum, 0.18 percent, average, 0.42 percent.

The moisture content is as a general rule higher in sheets than in crepes, the former contain more hygroscopic serums than the latter. The temperature and the moisture content of the air have an influence on the content of moisture of the crude rubber. From the researches carried out at the Bureau the following conclusions of the various crude rubbers is in a large degree dependent on the moisture content of the air and these dependent relationships are very different for the various kinds of crude rubber. Under certain conditions a small amount of moisture in the crude rubber can work considerable injury during the vulcanization and in many cases a vulcanization has been made impossible.

Resin Content

We note that it may be more correct to say "acetone extract" or "extract with other liquids" in place of "resin content," but we shall retain this expression. In the Bureau the following process is used: 305 grams of the finely cut sample is wound up in a nettle cloth and placed in a paper extraction thimble in a Berntrop extraction flask and heated for two to three hours with 100 c c of acetone under reflu condenser. Then the two threads suspending the thimble are taken out and this is suspended under the condenser for one or two hours so that the contents of the thimble are rinsed. The acetone is distilled off and the flask and the residue dried to constant weight at 105°C. Comparative researches between the Soxhlet and Berntrop apparatus show that they both give satisfactory results. Furthermore, the saponification values of the rubber resins are tested at the Bureau. Dekker found, for example:

For Fine Hard Para.	Unsaponificable,	0.8%	Resin,	3.0%
" Hevea Sheet.....	"	0.9%	"	1.8%
" Hevea Crepe.....	"	0.7%	"	3.2%
" Castilloa	"	14.0%	"	18.9%
" Congo Rubber...	"	3.0%	"	4.4%
" Jelutong	"	31.7%	"	38.1%
" Dyera Crepe.....	"	5.6%	"	7.2%

Different samples of Balsta were extracted with different solvents and the amount of extract determined, they gave, for example, the following values:

Alcohol Extract.....	38.27%	41.25%	43.34%	48.97%
Acetone Extract.....	37.18%	38.57%	42.81%	47.40%
Ether Extract.....	37.18%	41.24%	47.30%	60.10%
Insoluble in Xylol....	10.95%	16.55%	16.20%	14.47%

Gutta percha samples showed the following amounts of extract:

With Alcohol	7.82%	38.10%	67.18%
" Acetone	9.43%	37.67%	70.25%
" Ether	30.93%	40.03%	90.65%

From the above it appears that for the determination of the resin content of Balata and gutta percha acetone is the most suitable solvent.

Ash Content

In the Bureau the following process is used: 1-5 grams of a finely cut-up sample is ashed in a porcelain crucible. The crucible is placed in a circular opening in an asbestos plate, and the flame does not come in contact with the contents of the crucible. For cultivated rubbers a two gram sample is weighed out, for a wild rubber containing many impurities a five gram sample is taken.

Nitrogenous and Protein Content

These are determined at the Bureau by the Kjeldohl-Method The protein content is equal to the nitrogen content multiplied by 6.25 (this factor is doubtful). The average value of the protein content of thirty-five Hevea sheet samples and 102 Hevea crepe samples was found to be 2.82 percent. According to Dekka a small amount of nitrogen containing constituents goes into the extract when the crude rubber is extracted with acetone. It appears therefore that not all the nitrogen in the rubber exists as protein. In the water extract (six hours treatment with distilled water on a water bath) we were able to detect nitrogen compounds.

The "Insoluble" of Crude Rubber

By the "insoluble part" of the rubber we understand: a. That part which is not soluble in the ordinary rubber solvents. b. The residue which remains if all the constituents of the rubber are brought into solution as far as possible.

According to Dekker the processes of Spence, Beadle, Stearns, Tschirsch, Schmitz, Kratz, Marquis, Heine and others show results not free from objections. Fundamentally a part of the proteins goes into solution in the treatment of the rubber with xylol or benzol. The so-called insoluble part, determined according to these processes, contains also undissolved rubber. According to Beadle and Stearns the fact that a part of the proteins go into a solution and that a part remain in solution is attributed to the protective colloidal action of the rubber solution. Lewis and Waumsley found that lead, copper and mercury, in concentrated solutions of rubber in benzol with carbon disulfide, go into solution as colloidal sulfides. Dekker depolymerized rubber by heating with petroleum at 230-260°C and was able by this means to break up this protective colloidal action of the rubber.

Dekker's process for the determination of insoluble in crude rubber is carried out as follows: two grams of the crude rubber sample are heated at gentle boiling with 40 c.c. petroleum (fraction 220°-260°C) in a small flask with a long glass rod acting as a reflux condenser. The insoluble separates in finely divided particles which gradually conglomerate and form flakes. After the insoluble has settled the solution is filtered through asbestos in a Gooch crucible, the residue is washed with benzol and dried at about 150° to constant weight.

Dekker found, as examples, by using this method of separating the insoluble the following results: from Hevea sheets: ash, 6.1 percent (mostly lime); nitrogen, 10.5 percent; from fine hard Para: ash, 20.4 percent (lime and iron); nitrogen, 7.3 percent.

The rubber solvents ordinarily used, as benzol, xylol, toluol, carbon bisulfide, etc., do not dissolve the highest polymers of the rubber according to van Heurn. However correct this assumption may be, the solubility of rubber in benzol, for example, follows no set rule for a given degree of polymerization. Dekker takes the amount of raw rubber which dissolves in ordinary solvents heated to 130°C.

In 1888 Gladstone and Hibbett observed an increase in the insoluble by heating the latex during the coagulation. Dekker's researches gave the following results:

Hevea sheets, insoluble, 3.20%.
After three hours heating at 130°C, insoluble, 7.58%.
After eight hours heating at 130°C, insoluble, 6.85%.
Hevea crepe, insoluble, 3.35%.
After three hours heating at 130°C, insoluble, 9.19%.
After ten hours heating at 130°C, insoluble, 6.90%.

Mechanical working of crude rubber diminishes the amount of insoluble after heating at 130°C. Thus:

Hevea sheets.

After mechanical working gave 3.30% insoluble.

After three hours heating at 130°C, 0.80% insoluble.

Hevea crepe:

After mechanical working gave 2.85% insoluble.

After three hours heating at 130°C, 0.50% insoluble.

Fine Para, wild, washed:

After mechanical working gave 2.90% insoluble.

After three hours heating at 130°C, 1.45% insoluble.

Dekker observed that not only by heating in the air was there an increase of insoluble, but also by heating in a current of carbon dioxide the same thing occurred only to a greater extent.

Water Extract

The process used by the Bureau is as follows: three grams of finely cut up rubber are extracted for six hours with 100 c.c. of distilled water on a water bath. The liquid is filtered and the residue on the filter is again extracted, hot, for two hours with 55 c.c. distilled water. It is filtered again and the rubber residue washed with boiling water. The combined filtrates are evaporated to dryness in a weighed dish. The residue is dried one hour at 100°C and weighed. The following results were obtained, as examples of the water extract:

Coagulated Hevea cultivated rubber of various kinds. Average of eighty-six samples, 0.5 percent.

Fine hard Para-wild, 0.4-0.5%.

Cultivated Hevea rubber obtained by the evaporation of the latex, 4.0-6.5 percent.

The Bureau considers the degree of acidity of the crude rubber as the degree of acidity of the extract obtained by cold extraction of one gram of rubber with 200 c.c. of water for twenty-four hours, and is expressed as the number of cubic centimeters of one hundredth normal acid.

Five grams of finely cut up sample is extracted with 100 c.c. distilled water by standing for twenty-four hours, and a measured part of the liquid is titrated with $\frac{1}{100}$ N. caustic soda using phenol-phthalein as an indicator.

The following degrees of acidity in Hevea cultivated sheets and crepes were determined.

Sheets (35 samples)	maximum	1.3
Crepes (102 samples)	"	0.4
Sheets (35 samples)	minimum	0.1
Crepes (102 samples)	"	0.1
Sheets,	Average	0.5
Crepes,	"	0.15

Fine hard Para-wild:

This gave 0.4 — 0.5 c.c. $\frac{N}{100}$ acid per kilogram.

Indirect Method for the Determination of the Rubber Content

The direct methods for the determination of the rubber content give results for the content of rubber hydrocarbon which are not free from objections; some processes are, as a matter of fact, very defective.

In order to determine the rubber content by the indirect method for normal Hevea cultivated rubber, the sum of the determination of moisture, resin, ash and protein is subtracted from 100.

The determination, or rather the calculation of the rubber content of the Hevea product which is produced by the evaporation of the latex gives many difficulties.

The Bureau has adopted the following process for this kind of cultivated rubber which has a high water extract:

a. The moisture, water extract and acetone extract are determined on original samples.

b. The ash and proteins are determined on the extracted and dried samples.

c. From the sum of these five numbers is subtracted the water soluble part of the acetone extract and this number is subtracted from 100.

Simple Methods for Determining the Quality of Rubber*

G. Iterson, C. V. Heurn and A. V. Rosen

For this purpose suitable tests consist of a determination of viscosity, the vulcanization, and the examination of the vulcanized product.

For the determination of viscosity the simple method devised by A. V. Rosen is proposed (Gummi Zeitung Vol. 31 pg. 353).

The vulcanization is tested by means of specially prepared forms in a paraffin oil bath at 147° C, according to the newly worked out method of A. V. Heurn (Gummi Zeitung Vol. 31 page 429). This method gives results which agree closely with those obtained by autoclave vulcanization and agree very well among themselves. The degree of vulcanization of the raw rubber is determined by means of the coefficient of vulcanization of the vulcanized product.

For the mechanical valuation, the tensile test, with the Schopper machine, shows up to best advantage. The researches of V. Rossem (Gummi Zeitung Vol. 31, pg. 389) show that the curves for the tensile strength for ordinary first latex Plantation Rubber show very much variation, but they do not cross. It may be stated as a general rule that the displacement of the curves may be observed by raising the coefficient of vulcanization. From a considerable amount of data for first latex rubber we can only calculate the most probable position of the stretch-strain diagrams for determining the coefficient of vulcanization. For the mechanical valuation of rubber the stress-strain diagram is compared with the standard curve for the vulcanization coefficient determined and it either lies in the correct position, as shown by the standard curve, or it crosses one or more of the standard curves. So that in the latter case we have to deal with an abnormal rubber. Slight variations from those curves used in comparison would not be considered as abnormal.

* From *Chemiker Zeitung.*

The Softening Point of Asphaltum

A Synopsis of the Methods Used in Determining the Softening Point of Asphaltum and Other Plastic Substances

By D. F. Twiss and E. A. Murphy

Substances of the asphaltum type are employed widely in chemical industry under various names, such as gilsonite, grahamite, pitch, elaterite, albertite, bitumen, "mineral rubber," and "hydrocarbon," and as the differences in chemical composition are relatively slight, physical tests become of correspondingly greater importance.

The absence of any definite point of fusion renders all the so-called melting-point methods of examination really methods for the comparison of the tendency to soften with rise of temperature. Probably the method most commonly applied is that of G. Krämer and C. Sarnow, in which a core of the bituminous material in a glass tube is submitted to the pressure of a drop of mercury of definite weight and the temperature is measured at which the mercury forces its way through the material; details of other well-known methods have been given recently by L. M. Proctor (Chem. Met. Eng., 1919, 21, 81). The Krämer-Sarnow method is probably the most satisfactory, but possesses some disadvantages; for the introduction into the tube the bituminous material has to be rendered fluid by heat and the subsequent shrinkage during cooling causes an uncertainty as to the actual dimensions of the resulting bituminous core; the mercury and the bituminous material fall into the surrounding heating bath, and, although this is not serious as long as water is the heating medium, it is obviously undesirable when, as occurs frequently, the temperature of softening necessitates the use of a less volatile heating medium such as glycerin; the "flowing" capacity of a bitumen is probably not represented entirely by the ease with which a core of the material is forced from a cylindrical tube.

For the avoidance of the above disadvantages we have found the arrangement represented in the diagram (figure 1) very

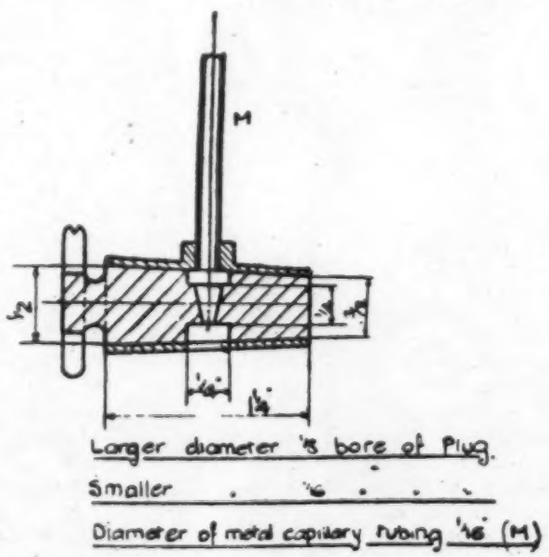


FIG. 1

convenient. The apparatus consists of a U-tube, M, one arm of which is connected by capillary tubing with a gun-metal tap, T. The central plug of this tap, which forms the most important part of the apparatus, has a conical or tapered bore ¼ inch in length and ⅛ and 1/16 inch in diameter respectively at the two ends; the bore is terminated at each end by a flat groove (see figure 2) to which its axis is perpendicular; the capillary metal tube of the tap is connected with the glass capillary by means of a well sealed metal sleeve.

To perform a test the sample of bituminous material and the clean plug of tap T are warmed in a steam oven for about 10 minutes so that the material becomes somewhat plastic; a piece of the softened material is then pressed into the wider end of the bore of the warm tap plug, as expeditiously as possible, with a small spatula, until the bore is filled throughout and a little extrudes from the other end; the tap plug is then

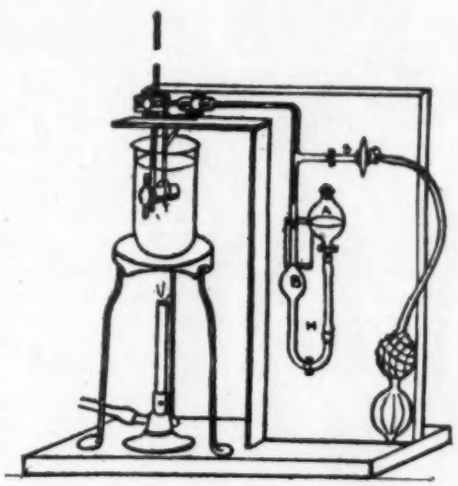


FIG. 2

allowed to cool and the excess of material removed carefully so as to leave the exposed surfaces of the material flush with the metal at the end of the bore. The plug is then refitted into its seating in the barrel, being previously lubricated if necessary with a smear of glycerin; from the principle of the test it is essential that the narrower end of the bore should face downwards and be directly above the free opening of the barrel of the tap. Sufficient mercury is present in the U-tube to reach approximately to the equator of the bulb, A, when the pressure is the same in each limb. Air is then forced gently through the tap, S, until the U-tube, acting as a manometer, indicates an excess internal pressure of 1½ inches of mercury between the two limbs. The tap, S, is then closed, when, if the apparatus is properly fitted, the internal pressure remains constant. On warming the medium in the bath, with the usual precautions, a temperature is finally attained at which the air pressure is sufficient to cause the complete extrusion of the core of bituminous material through the narrower end of the bore of the tap plug; the attainment of this temperature is indicated sharply by the sudden rise of the level of the mercury above B, and the reading of the thermometer is recorded as the softening point of the material.

The flat grooves cut at the two ends of the tapered bore of the plug of the tap, T, not only facilitate the filling of the bitumen and enable a considerable degree of accuracy in fixing the length of the bituminous core, but also, at the narrower end, provide a convenient space to receive the extruded bitumen so that the subsequent removal of the plug from the barrel is possible without difficulty.

Journal of the Society of Chemical Industries.

The bulbs, A (diameter approximately 1¼ in.) and B (diameter approximately ¾ in.), are so arranged that any expansion of the air enclosed between T and B, due to heat received from the bath despite the interposed screen, causes no appreciable alteration in the difference between the mercury levels. The pressure, therefore, is practically constant until the extrusion of the bitumen at the end of the determination.

In the following table is given the range of the readings obtained with various commercial samples which were tested repeatedly with the described apparatus and by the Krämer-Sarnow method; the first four samples were probably of gilsonite, whilst the fifth was of a coal-tar pitch.

Sample.	Softening points. Above extrusion method.	Krämer-Sarnow method.
1	155°—157° C.	138°—140° C.
2	145°—147° C.	127°—129° C.
3	146°—147° C.	124°—126° C.
4	179°—181° C.	148°—150° C.
5	94°— 95° C.	87°— 88° C.

It is evident that the apparatus which we have described above will also be of very considerable utility for the comparison of the softening points of other materials, such as gutta percha, balata, etc., which exhibit a similar gradual softening when heated. The relative behavior of various grades of guttapercha and balata towards heat is of great importance for some purposes. On account of the lack of adhesion between glass and gutta the Krämer-Sarnow method is not satisfactorily applicable, whereas our experiments using the method described above have given clear indication of its trustworthiness for this additional purpose. The significance of the test is manifest from the fact that although consistent results are obtainable with various commercial samples, the softening temperature observed ranged from 101° C., for a sample of washed raw balata, to 190° C., for a commercial sample of so-called "pure gutta." It is essential, however, that the portions used for the test should previously be rendered air-free and dry. In making these experiments the same "head" of mercury was used as was mentioned earlier for asphalt materials, but in the comparative examination of balatas or guttas it might be advisable in some cases to apply a greater pressure.

Public Holidays for April

The following calendar of bank and public holidays, which will be celebrated in April in the states and countries and on the dates enumerated below, is furnished by the Guaranty Trust Company of New York:

Thursday, April 1—A holiday (Holy Thursday) in Argentina, Austria, Bolivia, Brazil, Canary Islands, (half holiday), Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, Guatamala, Haiti, Honduras, Hungary, Iceland, India, Mexico, New Zealand (Taranaki), Nicaragua, Norway, Paraguay, Peru, Philippine Islands, Poland, Salvador, Spain (unofficial), Switzerland (half holiday in Basle and Zurich) (unofficial), Turkey (observed by Christians) and Venezuela.

Friday, April 2—A holiday (Good Friday) in Algeria, (unofficial), Argentina, (unofficial), Austria, Bahamas, Barbados, Basutoland, Bechuanaland, Belgian Congo, (unofficial), Belgium, (unofficial), Bermuda, Bolivia, Brazil, British Guiana, British Honduras, Canada, Canary Islands, Cayman Islands, Ceylon, Chile, China (unofficial), Colombia, Costa Rica, Curacao, Cyprus, Czechoslovakia, Denmark, Dominican Republic, Dutch East Indies, Dutch Guiana, Ecuador, Egypt, (observed by Christians), Federated Malay States, Finland, France, (Bordeaux, Marseilles and many other cities), French Guiana, French West Indies, Germany, Gibraltar, Guatamala, Haiti, Hawaii, (unofficial), Honduras, Hong Kong, Hungary, Iceland, India, Jamaica, Japan (Foreign Merchants), Jugoslavia, Liberia, Malta, Mauritius, Mexico, Netherlands, Newfoundland, New South Wales, New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Philippine Islands, Poland, Porto Rico, Queensland, Rhodesia, Salvador, Siam (Bangkok), South African Union, South Australia, Spain, (half day), Straits Settlements, Swaziland, Sweden, Switzerland, Tasmania, Trinidad and Tobago, Turkey (observed by Christians), Turks and Caicos Islands, United Kingdom, Venezuela, Victoria, Western Australia and the Windward Islands. In the United States: Connecticut, Delaware, Florida, Louisiana, Maryland, Minnesota, New Jersey, Pennsylvania and Tennessee.

Saturday, April 3—A holiday (Holy Saturday) in Argentina, Bolivia, Brazil (unofficial), Canary Islands (half day) (unofficial), Ceylon, Chile, China (unofficial), Colombia, (half day), Costa Rica (unofficial), Dutch East Indies, Ecuador, Federated Malay States, French Guiana, French West Indies, Guatamala, Honduras, Hong Kong, India, New South Wales, New Zealand, Nicaragua, Poland, Queensland, Rhodesia, Salvador, Siam (Bangkok), South African Union, South Australia, Straits Settlements, Sweden (half day), Switzerland (at Zurich), Tasmania, Victoria, and Western Australia.

Monday, April 5—A holiday (Easter Monday) in Algeria, Barbados, Basutoland, Bechuanaland, Belgian Congo, Belgium, Brazil (unofficial), British Guiana, British Honduras, Canada, Cayman Islands, Ceylon, China, Curacao, Cyprus, Denmark, Dutch Guiana, Egypt (observed by Christians), England, Federated Malay States, Finland, France, French Indo-China, French West Indies, Germany, Gibraltar, Hong Kong, Iceland, India, Ireland, Jamaica, Japan, Jugoslavia (half holiday), Leeward Islands, Madagascar, Mauritius, Monaco, Morocco, Netherlands, New South Wales, New Zealand, Norway, Nyasaland, Poland, Queensland, Rhodesia, Siam (Bangkok), South Australia, Straits Settlements, Sweden, Switzerland, Tasmania, Trinidad and Tobago, Turkey (observed by Christians), Turks and Caicos Islands, Victoria, Wales, Western Australia and Windward Islands. In the United States: Michigan.

Tuesday, April 6—A holiday (Easter Tuesday) in Ceylon, Tasmania, Victoria and Western Australia.

Wednesday, April 7—Brazil (States of Parana and Rio Grande do Norte), Bulgaria, Don Republic, Greece, North Russia, South Russia, Soviet Russia, Siberia and Ukrainia.

Thursday, April 8—Belgian Congo, Belgium.

Friday, April 9—Brazil (State of Rio de Janeiro), Cyprus, Don Republic, Egypt, Greece, Palestine, North Russia, South Russia, Siberia, Turkey and Ukrainia.

Saturday, April 10—Don Republic, Greece, Morocco, North Russia, South Russia, Soviet Russia, Siberia and Ukrainia.

Sunday, April 11—Costa Rica, India (unofficial).

Monday, April 12—Bulgaria, Cyprus, Don Republic, Greece, Rumania, North Russia, South Russia, Soviet Russia, Siberia, and Ukrainia. In the United States: North Carolina.

Tuesday, April 13—Bulgaria, Ceylon, Don Republic, North Russia, South Russia, Soviet Russia, Siberia, Ukrainia. In the United States: Alabama (Jefferson's Birthday).

Thursday, April 15—Baltic States. In the United States: Utah (Arbor Day).

Saturday, April 17—China (unofficial).

Monday, April 19—Uruguay, Venezuela. In the United States: Maine, Massachusetts.

Tuesday, April 20—In the United States: Louisiana (State Election Day).

Wednesday, April 21—Brazil. In the United States: Texas (San Jocinto Day).

Thursday, April 22—In the United States: Nebraska (Arbor Day).

Saturday, April 24—New Zealand (St. George's Day).

Monday, April 26—Queensland, Victoria. In the United States: A holiday (Memorial Day) in Alabama, Florida, Georgia and Mississippi.

Thursday, April 29—Portuguese East Africa, Portuguese West Africa. In the United States: New Hampshire.

Friday, April 30—Canary Islands (Teneriffe), Denmark, Iceland. In the United States: Wyoming (Arbor Day).

The Molding of Pneumatic Tire Covers

By C. M. Gautier

The volume of rubber remaining constant under any pressure, molding of pneumatic tire covers becomes a particularly difficult operation. The quantity of rubber and canvas to be used must be adjusted with great accuracy.

Great efforts have been made to obviate this difficulty, and fairly satisfactory results have been obtained, but, nevertheless, it remains a delicate operation.

This article intends to pass shortly in review the various methods employed in molding.

The most usual way consists in using the classical type of mould, consisting of a core A, and two shells, B and B (Fig. 1).

The use of these molds necessitates a very accurate determining of the quantity of rubber to be used, moreover, if it is desired to produce tires bearing patterns either protruding or hollowed out, it is necessary to establish a pattern in which the protuberances or hollows are arranged in a way allowing the shells B and B to be separated after vulcanization for opening the mold.

For certain types of tires like, for instance, the Palmer cord, Avon, Mackintosh, Kempshall, Beldam, and others, the opening of the ordinary mold would become impossible owing to their pattern, and another procedure must be adopted.

In 1908 I obtained a patent for a mold applicable to any non-skid pattern, and allowing the opening of the mold to be performed without difficulty. (Fig. 2.) This would consist of a core, two shells, and a sectional ring.

The sketch shows clearly how it is being worked. When the vulcanization is finished, the two shells are separated without difficulty, and it remains only to detach the sectional ring (bearing the impression of the desired pattern) adhering to the tire. This mold was described in the *India-Rubber Journal* in 1908, after the patent was granted to me.

Another alternative is to prepare on a calender a tread with the desired protuberances or hollows. Then one fixes on a tin and flexible steel band metallic protuberances (Fig. 4) exactly fitting the hollows of the tread, which is placed on the tread prepared on the calender, and previously fixed on the cover. This done the whole is placed between the two shells as shown in Fig. 3, and the cover is submitted to vulcanization.

FIG. 1 ORDINARY MOLD

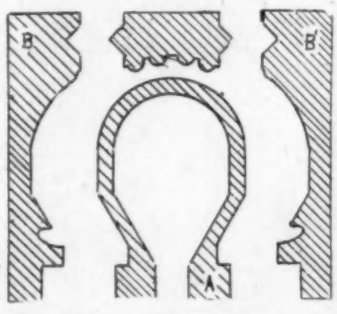


FIG. 2 GAUTIER'S MOLD

The opening of the mold is similar to the one of ordinary type, only that the steel band remains fixed on the cover. It is, however, easy to detach the latter on account of its flexibility by starting at the section.

The hollows in the tread can also be filled up with plaster, which thus replaced the flexible band; the cover then assumes a plain form, and can be vulcanized in an ordinary two-shells mold, the plaster being removed when the vulcanization is finished.

A certain number of manufacturers prefer to perform the molding in two consecutive operations, consisting in firstly molding the casing, and secondly in fixing the tread to the casing.

In this case the molding of the casing is performed in the ordinary way by using a mold consisting of two shells and core. The thinness of the casing and its simple form render the molding comparatively easy. The casing is then removed from the inside of the cover, and the tread fixed to the already half-vulcanized casing.

In order to obtain hollows or protuberances on covers, one must, as said above, produce on the calender a tread of a suitable form and pattern. One can apply to the hollows metallic parts of a form appropriate, or the flexible band bearing

FIG. 3

FIG. 4

in high relief the counterparts of the hollows in the tread, or fill with plaster. In the inner side of the cover a core of aluminum having exactly the same shape as the steel core on which the first vulcanization was performed, is placed, the whole is then strongly wrapped preferentially by a special machine for this purpose, and then the second vulcanization is applied.

It is possible to obtain all kinds of rubber non-skid in two-shell moulds.

The casing is vulcanized in an ordinary mold, and then the tread is fixed on. It is not necessary to reproduce beforehand the pattern intended for the tread, the internal pressure forcing the rubber to take the shape of the mold. The tire is placed in a shell, an air bag placed inside the cover, then a steel ring then the second shell, the shells being correspondingly engraved with the desired designs.

The shells are held together by strong bolts, then the air bag is inflated, and the vulcanization proceeds. The opening of the mold is easy. After taking same from the vulcanizer, the air bag is deflated, the bolts removed; it is easy to separate the shells, whatever the size and shape of the pattern may be, as the absence of a solid core allows the cover to give way, and consequently makes it possible for all protuberances to detach themselves from the mold.

Although this procedure is frequently employed, it is not to be recommended, the risks of an irregular vulcanization being great; the mold only being externally heated, the air enclosed in the air bag remains at a much lower temperature in the vulcanizer, and, besides, the temperature inside the cover is irregular owing to the bad caloric conductibility of the air.

Attempts have been made to use presses for molding pneumatic tire covers similar to those used for molding bicycle covers, but up to the present without really satisfactory results. I think I have described summarily the procedures generally employed, their diversity indicating the difficulties met.

* India Rubber Journal, London, England.

News of the Mid-West Association

Federal Taxation—Victory for the Business Man—Child Labor Tax Returns —Crude Rubber Importations for January and February— Crude Rubber Market Review

The following bulletins have been sent to members of the Mid-West Rubber Manufacturers' Association:

Federal Taxation

March 5, 1920.

To Members:

The following resolution, adopted by the National Industrial Conference Board at its February meeting at New York, is timely and will appeal to every member as a practical suggestion looking to the framing of a scientific tax law to take the place of the present inequitable and burdensome statute:

"*Resolved*, That the National Industrial Conference Board earnestly recommends and urges that provision be made forthwith for the creation and appointment by Congress of a Federal Commission composed of authorities in the field of taxation, including at least one official of the United States Treasury Department, but a majority of whom are not in the service of the United States, to examine the present internal revenue laws of the United States relating to income, profits and miscellaneous taxes, with a view to repealing or amending said taxes or substituting any other form or method of taxation for any of said taxes; and that said Commission be directed to report to the Congress of the United States its conclusions and recommendations, including drafts of any bills, as soon as may be, but in no case later than one year from the appointment of the Commission."

It is suggested that you communicate the substance of this resolution to your Senators and Representatives in Congress, urging them to take action along the lines indicated.

H. S. Vorhis, General Manager.

Victory for the Business Man

March 5, 1920.

To Members:

We take pleasure in reporting that the House of Representatives at Washington yielded to the pressure brought to bear by the business interests of the country, and by a vote of 210 to 39 on March 2 the item of $165,000 for the commercial attaches of the Bureau of Foreign and Domestic Commerce was put back into the Legislative, Executive and Judicial Appropriation Bill; also the fund for the promotion of the general work of the Bureau of Foreign and Domestic Comerce was increased from $175,000 to $325,000, which are the same amounts allotted during the current fiscal year.

This is a victory for the business man, who put himself and his influence behind the restoration of these appropriations, and it serves to restore confidence in the good intentions of the Congressmen who have been pleading for the development of an American merchant marine. What could a merchant marine do without an effective foreign trade promotion service? Money devoted to the development of our foreign trade, which now amounts to only about ten per cent. of the whole volume of business of the United States, is surely well invested.

H. S. Vorhis, General Manager.

Child Labor Tax Returns

March 11, 1920.

To Members:

We are advised from Washington that the Bureau of Internal Revenue is now sending out to all manufacturing establishments, forms on which they are required to submit to the Commissioner of Internal Revenue, the terms of information concerning the employment of child labor. Approximately 300,000 such forms are being distributed through collectors.

You will recall that the Child Labor Tax section of the Revenue Act of 1918 imposes a tax of 10 per cent of the yearly net profits upon every person operating a mine or quarry in which children under sixteen years of age "have been employed or permitted to work during any portion of the taxable year."

The same tax is imposed upon every person operating a mill, cannery, workshop, factory or manufacturing establishment in which children under fourteen years have been employed or permitted to work, or in which children between the ages of fourteen and sixteen have been permitted to work more than eight hours a day, or more than six days a week, or before 6 a. m. or after 7 p. m. Operators are required to state under oath whether during any portion of the taxable year 1919 children within the prescribed age limits have been employed or permitted to work. An answer as to the working hours of children between the ages of fourteen and sixteen also is required.

Child labor information returns are called for under that section of the Revenue Act which provides that "whenever in the judgment of the Commissioner necessary he may require any person, by notices served upon him, to make a return of such statements as he deems sufficient to show whether or not such person is liable to tax." The penalty for failure to make proper return is a fine of not more than $1,000. For "willful refusal" to make such return, the penalty is not more than $10,000 or imprisonment for not more than one year, or both, together with costs of prosecution.

H. S. Vorhis, General Manager.

The Crude Rubber Importations for January and February, 1920

March 13, 1920.

To Members:

Crude rubber statistics for February, 1920, show importations of 32,994 tons, an increase of 15,538 tons over February, 1919. This is a greater weight of rubber than was imported during any one month of 1919, the high point of that year having been reached in October with 28,888 tons.

Importations for January, 1920, were 21,351 tons as compared with 7,235 tons for January, 1919, this later amount having been affected by the war restrictions, and so is not a helpful comparison.

The combined total for January and February, 1920, is 54,345 tons which falls short by 2,766 tons of the combined figures for the two biggest months in 1919 viz: March with 28,223 tons and October with 28,888, a total for those two months of 57,111 tons.

An examination of the figures from February 1919 to February 1920 shows that the rate of importation has been fairly uniform with the highest point reached in the last month mentioned. Some dealers are expecting to see greatly increased importations this year over the total of 226,032 tons for 1919.

H. S. Vorhis, General Manager.

Crude Rubber Market Review

March 13, 1920.

To Members:

Trading in crude rubber the past week has been on the whole sluggish with some jumpy moments caused by the sharp rise in sterling exchange which on Wednesday and Thursday advanced from 3.62 to 3.86. The fluctuations and uncertainty in regard to exchange are unquestionably acting as deterrent factors in all crude transactions, especially on the part of the sellers. Buyers also have expressed a willingness to sit tight under present conditions believing that cheaper rubber is in sight.

The market opened on Monday with limited buying interest which brought a slight decline in prices. First Latex spot and Ribbed Smoked Sheets spot were held at 46½. London exchange reached 3.62.

On Tuesday exchange moved up to 3.65 and the New York market showed more strength. Sizable sales were reported but no appreciable change in prices.

On Wednesday a sharp advance in London Exchange to 3.79 injected life into a sluggish market and prices for spots and all future positions moved forward—First Latex spot to 47¾ and Ribbed Smoked Sheets spot to 47½.

On Thursday sterling exchange again jumped reaching 3.36 as a high point which resulted in Wednesday's advances in crude rubber being duplicated. Prices for First Latex and Ribbed Smoked Sheets went as high as 49 cents.

On Friday and Saturday exchange slumped down to 3.65 and crude prices sagged back to Monday's figures.

H. S. Vorhis, General Manager.

Misleading Title Barred

The Good Wear Tire & Rubber Co., of Chicago, Ill., has been instructed by the Federal Trade Commission that it must refrain from using its name or any name calculated to simulate the name of the Goodyear Tire & Rubber Co. It must also refrain from cementing and sewing together two second-hand tires described as double tread and selling these without the use of other words to show that these tires are not made from new and unused material but are reconstructed.

Tracy Now With Globe

After more than fifteen years association with the Michelin Tire Company and with a total of more than twenty years in the tire industry, R. B. (Dick) Tracy, has started upon his new work as Western manager of the Globe Rubber Tire Company. Mr. Tracy was formerly Western district manager for Michelin. Seasoned executives seems to be the policy of the Globe company for the signing up of Tracy makes the third man of his type to associate with Globe during the past few months.

Sackler Bros. Move

Announcement has been made to the effect that the Empire Metal & Rubber Waste Company has moved to new quarters at 427-435 East 102nd Street, New York City. The firm also states that it has discontinued its former firm name and in the future will do business under the firm name of Sackler Bros.

Rubber Production on Pacific Coast

Many Firms Follow Lead of Goodyear Tire and Rubber Co.—Great Activity in Los Angeles—History of the Western Movement of Rubber Manufacturers

The battle of rubber has opened on the Pacific Coast.

The first gun in the great conflict dates back to July, 1919, when President F. A. Seiberling announced that the Goodyear Tire & Rubber Co. would build its new plant in Los Angeles.

The second shot was fired when the Fisk Rubber Co. of New York announced that it would battle its greater rival for the California and Arizona output of Pima cotton, without which the rubber industry could not survive.

The third shot is to be fired on June 1 next, which gives the Goodyear a tremendous advantage over its rival, when the new mammoth Wingfoot plant starts its wheels to churning with more than 2,000 men as its crew.

Other great rubber companies give promise of soon entering this battle in which millions of dollars and the greatest executive brains in the rubber world will be pitted against each other.

Cotton the Prize

And the spoils will be cotton—millions of pounds of the world's finest —and the victor will arise from the melee as the leader in the tire industry.

The ammunition will be money—whole mints of it—and the rubber companies are spending it lavishly in an effort to secure each for itself the major portion.

And the battleground will be what a few years ago were great desert wastes in which nothing but cacti and sage brush grew.

The Goodyear Tire & Rubber Co., which has done so much in making Akron the rubber center of the world, gives promise of doing much more for Los Angeles and California as a result of this battle of rubber.

Goodyear Farm in Arizona

Goodyear got in on the ground floor, when several years ago it secured a great tract of 28,000 acres of desert land in the Salt Lake Valley of Arizona and reclaimed it through a great irrigation project.

Now acre after acre of cotton blooms and matures in the desert where formerly nothing but miles after miles of sand and cacti and sage brush stood beneath the blistering sun.

But this great ranch was able to supply but a small part of the great supply needed by the Goodyear Tire & Rubber Co.

So arrangements were made with cotton growers of the Imperial Valley of Southern California, just a few miles away from Los Angeles, to grow long staple cotton, as it is one of the few localities in the country in which this grade of cotton can be raised.

And it was because of this proximity to these two great cotton districts that won Los Angeles the western branch of one of Akron's greatest industries.

In fact, so great are the possibilities of these fields, combined with the easy access of Los Angeles harbor to the great rubber plantations of South America, of India, and of the South Sea Islands, that this California child gives promise of rivaling in a few short years its great mother in Akron.

But let us gaze in retrospect at the impending battle between these great rubber companies.

Only the best cotton can be used in the manufacture of rubber tires. It is the basis of the tire industry. Without the Pima long staple cotton the 6,000-mile guarantees on tires would be impossible.

It constitutes the real tire in fact, while the rubber serves to upholster it. Without either, however, successful tire manufacture would be impossible.

And that is the secret of the battle.

As a result of the battle the cotton farmers of this great new country will be made wealthy—some immensely rich. It will make a new crop of western millionaires.

As has been said, the Goodyear has a great farm of 28,000 acres in Arizona. But it is not enough even for this great company.

And then there are the B. F. Goodrich Co., the Firestone Tire & Rubber Co., the Kelly-Springfield Tire Co., the Miller Tire & Rubber Co., The United States Tire & Rubber Co., the Fisk Rubber Co. and numerous smaller companies.

But it is the Fisk concern that is pushing the battle of rubber, or rather cotton, in California's beautiful Southland.

It reached its climax when the Fisk Rubber Co. announced that it wants at least 50,000 acres of Pima long staple cotton in 1920. And it has quietly been perfecting an organization that extends into the great cotton fields which stretch out from the San Joaquin Valley in California to the Salt River Valley, Yuma and Tucson, Arizona cotton districts.

High Prices Offered

Agents of this concern have been instructed to sign contracts with farmers at once at any price within reason.

Spot cash and a minimum of 60 cents a pound is offered. Pima cotton is now bringing 90 cents to $1 a pound, and the 1919 crop is practically exhausted.

But, the Fisk concern has another weapon up its sleeve. And that is the promise that it will pay the highest price on the market. It agrees that the prices will not be allowed to go below 60 cents.

The company also agrees to finance farmers to the extent of $25 an acre to supply planting seed at cost to growers and furnish adequate ginning facilities and supply all necessary funds for picking the cotton in the fall.

In 1919 about 100,000 acres of this cotton was grown in this great new Southland, but 90 per cent of this went to the Salt River Valley of Arizona.

But now California has entered the fray with a vengeance. The policy of the Fisk concern will result in 50,000 in new cotton acreage, at the very least. And conservative estimates say that with the development of further water supply and irrigation more than 1,000,000 acres of California lands that are now little more than deserts will be adapted to Pima cotton culture.

Shortage of Cotton

With the Nile Valley in Egypt unable to supply the growing demands, and a shortage reported in the South Sea Islands, where the rubber industry formerly went for their cotton supplies, Arizona and California cotton districts are being looked upon as the future hope of the cotton industry.

The districts upon which the Goodyear and Fisk concerns have entered include Fresno, Bakersfield, Perris, Blythe, Indio and Coachella, Imperial Valley in California, Salt Lake River, Yuma and Tucson in Arizona.

Oak Plant Destroyed by Fire

The Oak Tire and Rubber Co., of Ravenna, Ohio, was destroyed by fire on the night of Monday, March 15. The factory which is located in the heart of the town on Sycamore street, burst out in flames at seven-thirty o'clock, caused by spontaneous combustion of naphtha fumes, destroying the entire structure, causing a loss of $200,000.

The rubber factory, which was a five-story brick building was completely ruined, the entire building crumbling before firemen from Akron, Kent and Alliance could arrive on the scene of the conflagration. An alarm was sent into Akron promptly at nine o'clock, and number seven house responded, making the run, a distance of eighteen miles, in about twenty minutes. Another alarm was sent to Alliance, a distance of about forty miles, the chief and a hose cart from that city answering the call. They arrived at Ravenna about an hour after the Akron firemen had reached the scene of the fire.

The firefighters bent their efforts upon preventing the flames from spreading to near-by residences and smaller buildings. Many barns and shacks were burned in addition to the rubber factory and the home of G. W. Pitz, which was just recently purchased by the rubber concern. The company planned to remove the house to make room for an addition to the factory.

Paul Collette, president of the Oak Tire and Rubber Co., and John Shire, general superintendent, could not be reached at one o'clock, but the loss to the rubber concern will total almost $200,000. Several thousands of dollars worth of pure rubber which was stored in the building was destroyed before any of the stock could be saved. The loss is covered partially by insurance, approximately $75,000. A large number of barrels filled with carbon were rolled into the road before the flames had spread to the room where they were stored.

The three companies which responded from Akron, Alliance and Kent fought bravely to save the building but to no avail. The flames had gotten such a start that it was not long after the arrival of the fire companies that the roof of the structure crumbled and fell. The walls then caved in, until only the side walls of the rear end of the rubber plant remained standing. It was not until midnight that the firemen succeeded in controlling the flames which had raged for three hours. The rubber plant was nothing more than a mass of bricks lying on the ground. No one was hurt by falling bricks.

Latex Experimental Department

The Latex Tire & Rubber Company will soon establish in connection with their plant a large experimental department which will be complete and up-to-date in every respect. It is intended to make this experimental department a complete miniature rubber factory in itself.

Every lot of rubber, fabric and compounding materials received at the factory will be examined and passed on in the chemical department, before being sent into the factory and used in the making of tires.

News From the Rubber Metropolis

Tire Prices Advanced—McGraw Business Increases—Goodrich Officers Elected—Standard Tire Sales Increase—Cotton Fabrics in Akron —Akron Stock Prices—Goodyear Maximum Wage

Tire Prices Advanced

(Special Akron Correspondence)

Gross sales of rubber companies in the Akron district will be increased nearly $100,000,000 this year as a result of the recent advance in the price of tires.

On March 8 all companies put into effect new price lists which average eighteen per cent more than the old lists.

Based on estimated sales of around $600,000,000 for the next twelve months, the increase means that about $100,000,000 will be added to the sales returns of the Akron tire factories.

The advance has been expected for months, but it came with a suddenness that surprised many persons in close touch with the rubber business here. The smaller concerns took on a new lease of life several months ago when talk of the increased price first began. These companies needed higher prices in order to handle their present business and enable them to reach out for more, as increasing costs had cut deeply into the previous percentage of profits.

Officials of the smaller companies looked with anxious eyes toward the larger manufacturers. Finally through the mysterious channels of business gossip, it was learned that the leaders in the tire field had prepared new price lists and sent them to the printers. Even then some of the smaller companies did not announce to the trade advances in their lines, the officers of these concerns declining to chance taking the lead in first making public higher price lists.

When the advance did come, however, practically every company was prepared. Printed price lists were distributed at once through branches to dealers in all parts of the country.

The price advance this time was unaccompanied by the usual statements from companies as to the reasons. There had been, however, considerable propaganda disseminated some time back as to the ever increasing costs in the manufacture of tires. Cotton, it was pointed out, was at such a high price that the cost of fabric was all out of proportion to the selling prices of tires. Crude rubber was lower than usual, but, it was said, the increased demand might force the price of this commodity up.

It was the advance in labor costs, however, which proved the determining factor. After the Goodyear Tire & Rubber Co. had announced a minimum daily wage of $6 a day for men other companies made proportionate increases. The wage advance averaged around fifteen per cent for tire builders.

Practically all of the companies, it is said, now have the same price lists. There may be a little difference, but it is not enough to be noticeable when the entire tire lines are taken into consideration. Because of this fact, some companies which were quoting lower prices made higher advances than others. This is one of the reason why there was so little publicity given to the price increase, it is believed.

McGraw Business Increases

(Special Akron Correspondence)

The McGraw Tire & Rubber Co. is reported in unusually good shape for fabric, a factor that is causing many rubber companies concern at the present time. It is said McGraw has fabric in warehouse or contracted for to last into late fall and, figuring on present prices, the supply stands the company in excess of $1,000,000 profit.

McGraw's business is still in a state of transformation. It is now shipping direct to the trade while formerly its production went to jobbers largely. Then, too, it is developing the cord tire business and at present daily production averages about 2,000 tires. About thirty-five per cent of the fabric on hand is available for cord tires.

McGraw will be in good shape, it is said, to supply the trade with tires when the demand increases with the opening of spring. In this connection rubber companies are expecting a sharp increase in price of tires, some authorities thinking an eighteen per cent advance will occur.

Goodrich Officers Elected

(Special Akron Correspondence)

B. F. Goodrich Co. stockholders have ratified the proposal of directors to issue $30,000,000 in seven per cent, five-year convertible notes and to issue 1,500,000 shares of no par value common stock. The details of the new financing program were announced in a previous issue.

Directors were re-elected. B. G. Work was named president and chairman of the board; H. E. Raymond, vice-chairman of the board; and C. B. Raymond, W. A. Means, H. K. Raymond, W. O. Jones and Dr. W. C. Geer, vice-presidents. W. C. Arthur was elected assistant-secretary; and V. I. Montenyohl and L. L. Smith were named assistant-treasurers.

Standard Sales Increase

(Special Akron Correspondence)

Sales of the Standard Tire Co. of Willoughby, for the first year of the company's existence amount to $1,000,000 it was announced recently by T. A. Palmer, secretary and treasurer. The new power plant which is expected to be in operation within a few days will increase the daily production from between 300 to 350 tires to nearly 500 tires, it was said. The company is capitalized for $2,000,000, of which $700,000 of common and $175,000 of preferred is outstanding.

Cotton Fabrics in Akron

(Special Akron Correspondence)

Manufacture of cotton fabric for tire factories will be started here soon, it was announced recently following the incorporation of the Akron Cotton Mills Co. at $500,000 by R. C. Stamper, C. S. Wirth and others. The company already has acquired property near the business district upon which mills will be erected. It is understood that several of the large local rubber companies have subscribed stock in the concern.

Akron Stock Prices

(Special Akron Correspondence)

Decision by the United States Supreme Court that stock dividends are exempt from the federal income tax law, resulted in increased buying of high priced issues on the Akron rubber stock market.

Goodyear common went up fifty-five points to 415 in the first days trading after the ruling was announced. It dropped the next day to 400 and then climbed to 405 where it has remained since.

The demand for Miller sent that stock up twenty-five points to 185 and as buyers kept asking for more stock the quotations went over the 190 mark with every indication pointing to a higher price for this issue.

Firestone common climbed ten to fifteen points, but was unable to hold its gain and is back to 165 and 170 asked.

India Rubber has developed new strength on the market and now is quoted at 180 bid and 200 asked.

Kelly-Springfield climbed ten points to 130 and this stock continues to be in demand.

Goodrich common reacted slower than other local issues, but it also showed a gain of around five points.

Quotations of the smaller rubber companies' stocks are changing little. The bid for General common has been increased from 550 to 600, but everybody knows there is none of that issue to be had at anything like that price. It is doubtful if a bid of 800 would bring out any of this stock.

The stock market had discounted the recent advance in tire prices and when that move was announced the traders refused to boost their bids to any noticeable extent.

Following are the quotations posted on March 17:

	Bid	Asked
Amer. R. & T., com.	90	...
Amazon Rubber	...	101
Firestone, com.	165	170
do, 6 per cent pfd	92	94
do. 7 per cent pfd	97	98
General, com.	600	...
do. pfd.	99½	101
Goodrich, com.	71½	73½
do. pfd.	94½	95½
Goodyear, com.	400	410
do, 1st pfd	98½	100
India Rubber	180	200
Kelly Springfield	128	131
Mason, com.	30	...
do, pfd.	...	80
Marathon, com.	...	55
Miller, com.	190	200
Mohawk, com.	...	340
Portage, com.	96	98
do. pfd.	85	89
Phoenix Rubber, com	...	23
do, pfd.	...	90
Republic, com.	3¾	4¾
do, 1st pfd	...	65
do, 2nd pfd	40	60
Rubber Products	105	120
Star Rub., com.	350	400
do. pfd.	...	99
Swinehart, com.	...	90
do, pfd.	...	90

Goodyear Maximum Wage

Following the announcement of a minimum wage of $6 a day for factory laborers, a few weeks ago, the Goodyear Tire and Rubber Co. announced a plan for a minimum wage for janitors, watchmen, policemen and office employes.

According to section three of the plan, all salary employes, office or factory, who fall within the definition of Industrian will have their wages changed to a minimum wage of $135 a month for male or $90 for female, starting March 15.

The Factory and Office Personnel Divisions will decide who fall under the rating of Industrian.

News from the Trade at Large

Latex Tire & Rubber to Begin Production—Long-Wear Tire Expands—International to Increase Stock—India to Double Output—Lehigh Changes Firm Name

Latex Tire to Begin Production

The Latex Tire and Rubber Company, of Fond du Lac, Wis., organized in May, 1919, expects to be manufacturing tires and tubes within the next two months. Ground was broken for the factory building in September, and the structure was completed in January of this year. Rubber machinery which is being supplied by the Akron Rubber Mold Company, and the Adamson Machine Company, of Akron, Ohio, is now being shipped to the plant at Fond du Lac, and is being set up in place as fast as it reaches the factory.

The company is organized by men who have had long experience in the rubber industry. F. S. Danenberg, president and general manager of the company, was one of the founders of the Marion Tire and Rubber Company, of Marion, Ohio, and was for a number of years an executive of that corporation. He was previously connected with other rubber corporations, and has a successful experience of over eight years as a rubber executive. J. T. Jones, secretary and sales manager, has, for the past sixteen years, been actively engaged in successfully directing the affairs of a number of widely known corporations. Grant Lambright is general superintendent in full charge of production. He started his rubber career in 1888 with the B. F. Goodrich Rubber Company, of Akron, Ohio, and has been continuously engaged in the manufacture of rubber products since, a period of thirty-two years. Mr. Lambright helped to build the first pneumatic tire made by the B. F. Goodrich Rubber Company. He is patentee of the Lambright Cushion Tire, which will be manufactured and sold exclusively by the Latex Tire and Rubber Company. D. J. T. Kennedy, assistant-secretary, director of advertising and sales, was formerly one of the executives of the Mason Tire and Rubber Company, and was previously with the Swinehart Tire and Rubber Company, Akron, Ohio. J. T. Brofka, of Fond du Lac, is vice-president. Orlando J. Koll, cashier of the State Bank of St. Cloud, Wis., is treasurer. Edward Yockel, a prominent lawyer of Milwaukee, is legal counsel for the company. T. W. Meiklejohn, Wisconsin state agent for the Fordson Tractor Company and president of the Service Motor Company, of Fond du Lac, is a director.

The company has purchased a valuable tract of land located on Lake Winnebago, upon which has already been erected a fine concrete and steel building. The company's plant site joins the main line of the Chicago and Northwestern Railroad, a switch from which has been laid into the company's property. A switch has also been laid down from the Chicago, Milwaukee and St. Paul Railroad to our doors, thereby connecting the plant with this important system. The plant is also within short trucking distance of the Soo Line.

The plant is built on the unit system to provide expansion in the future to any extent that the business may demand. There is a large surrounding acreage to allow for this expansion. The present plant is 50 x 150 ft., two stories in height, with a power plant 50 x 40 ft. A short distance away from the factory, an office building has been erected. The capacity of the first unit of the plant is 300 tires and 700 tubes daily.

Long-Wear Expands

At a special stockholders meeting February 19, arrangements were completed to change the name to the Long-Wear Tire & Rubber Company, increase the capital from $500,000 to $5,000,000, divided into $700,000 preferred and balance common stock, and to absorb the business of the Quality Tire & Rubber Company, Anderson, Ind.

General offices will be moved to Anderson in March, and a large addition to the Elyria plant for making cord tires will be built in the spring.

Under the new arrangement the Elyria plant will have a capacity of 300 Long-Wear cord tires a day and the Anderson plant 1,000 fabric tires and 2,000 tubes per day in addition to a complete line of "Anderson Quality" fabric tires and special brands for jobbers.

The general management remains in the hands of Frank W. O'Brien under whose guidance the output of the company has increased from fifty tires a day in 1918 to a capacity of over 1,000.

As a part of their expansion plans, it is said the company will purchase and operate plants in various cities as opportunity presents itself.

International to Increase Stock

The business of the International India Rubber Corporation, of South Bend, Ind., has increased to such an extent that on January 1, 1920, it had unfilled orders on hand for nearly $1,000,000 worth of tires. Sales so far during the year 1920 have exceeded those of 1919 by fully 300 per cent. The present factory capacity, together with plant additions in the course of construction, are not sufficient to supply this large increase of business, and at a recent meeting of the board of directors it was decided to increase the capital stock of the corporation from $1,000,000 to $2,500,000.

A sufficient amount of the new stock has already been subscribed by present stockholders to assure the construction of plant additions which will more than double the present capacity. The present plant is operating night and day in an effort to produce sufficient tires to supply the trade until the new plant additions can be put into operation.

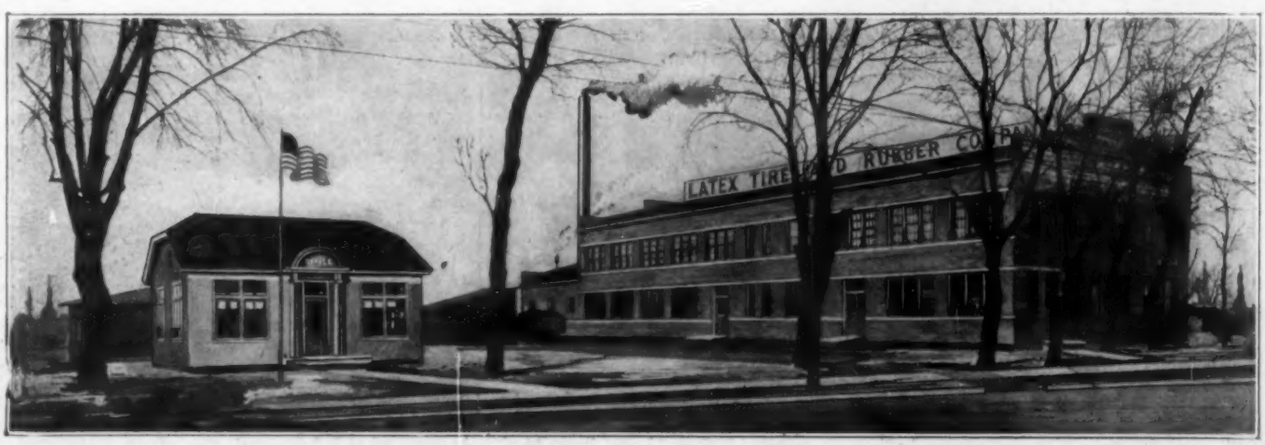
India to Double Output

With the announcement of a forty per cent stock dividend comes the news that the India Tire & Rubber Co., of Akron, will more than double its production of tires in 1920. More factory space is now being added to the present plant and ground will soon be broken for a new factory building which will be completed before the end of this year.

The India company, which was organized as recently as 1917, is pointed out as one of Akron's remarkable instances of industrial growth achieved on a relatively small capitalization. D. A. Grubb, secretary and general sales manager of the company, is given much credit for India success. A sales executive of more than twenty years of experience, he explains that he has operated India affairs on the proved theory that a quality product is best marketed on a fair profit and quick sale basis.

Lehigh Changes Firm Name

Announcement has been made by the Lehigh Tire & Rubber Company, of Pottstown, Pa., that owing to the previous local use of the name "Lehigh Tire & Rubber Company" the firm will in the future be known as, and all future correspondence should be addressed to the "Vulcweld Tire & Rubber Co."



FACTORY OF LATEX TIRE & RUBBER COMPANY, FOND DU LAC, WIS.

Rubber Division to Meet

Arnold H. Smith, secretary of the Rubber Division of the American Chemical Society, has sent the following letter to A. L. Viles, general manager and secretary of the Rubber Association of America, Inc. The letter which describes the aims of the Rubber Division is as follows:

It is through your organization that we desire to reach the manufacturers and to call to their attention the aims and purposes of the Rubber Division of the American Chemical Society.

This division is composed of chemists in the rubber industry who get together twice a year, presenting and discussing papers of general interest. We endeavor to keep abreast of the times in chemical research work in its application to rubber, helping each other to better understand the nature of the material with which we are working.

This is a new division of the Chemical Society and came as a result of the efforts of the members of the former Rubber Section. The division was organized in the spring of 1919 and held its first meeting in Philadelphia, September. At this time some sixteen papers were presented by various authors dealing primarily with various phases of the chemical side of the rubber industry. Our second meeting will be held in St. Louis during the week of April 12th in conjunction with the regular spring meeting of the American Chemical Society. The Rubber Division in all likelihood will meet at Hotel Statler on the 14th and 15th.

We desire that the attention of all rubber manufacturers be called to these meetings so that their chemists and technologists may attend. We feel that material will be presented which will be of general interest to the chemists of the industry and we most cordially extend them the invitation to meet with us at this time.

We would be pleased to get in touch with any rubber chemists who are not members of the Chemical Society or who do not know of the Rubber Division so that we might inform them of the activities of the society and the purpose of the Rubber Division.

If you so desire, we will be glad to furnish you with any number of copies of this announcement so that they may be sent to the members of your association.

ARNOLD H. SMITH, Secretary,
Rubber Division.

M. & A. M. A. Seeks New Members

A nation-wide campaign to increase the membership of the Motor and Accessory Manufacturers Association has just been launched. More than 300 representative manufacturers of parts and accessories for the automotive industries are now members of the association and it is hoped to add to this group a large percentage of the eligible companies who are not yet affiliated.

In announcing the campaign, M. L. Heminway, general manager of the association, stated:

"The greater the membership, the greater will be the power for constructive good and the greater the results for all concerned."

Two features will be stressed in the educational work on behalf of the association: 1st. The broad fundamental benefits accruing from teamwork in thought and action. 2nd. The specific advantages resulting from membership in the association and the numerous services rendered by its various departments.

"The association," says Mr. Heminway in his announcement, "has behind it a sixteen year record of constructive achievements for the good of the entire industry. Within the last year or so, its scope has been enlarged and its services and advantages multiplied to the point where we believe it is practically essential for every forward-looking manufacturer in the industry to become affiliated."

Throws Money Away as Object Lesson

A few days ago George B. McCallum, treasurer of the McCallum Hosiery Company, of Northampton, Mass., threw $197 in gold and silver coins out of a window of the factory. Mr. McCallum was not crazy, nor was he giving an imitation of a new Texas oil millionaire calling a covey of Broadway chorus girls. He was giving an imitation of his own employes.

They have been throwing $197 out of the factory window every week for months in careless waste, and he took the most spectacular method he could devise to call their attention to it. After the riot caused by the scramble in the snow for the coins had quieted down he explained to the assembled operatives that in one week 11,760 needles worth 1¼ cents each had been lost by them. That represented a loss exactly equal to the $147 silver dollars he had thrown out of the window, except that no one had had a chance to recover any of it.

Silk scattered under foot and ruined the week previous represented a loss equal to the $50 in gold he had scattered to the winds. It was an impressive lesson even though some of the employes were still too busily engaged hunting in the snow for coins to listen to it.

Dunlop Insures Employes

As an evidence of their interest in the welfare of their employes and their goodwill toward them, the Dunlop Tire & Rubber Goods Co., Limited, of Toronto, Canada, have recently put in operation an Employes' Group Insurance Plan, whereby the lives of their employes, numbering more than 2,000, are insured for amounts ranging from $500 to $2,500 according to length of service. The policy increases as the term of service lengthens.

This insurance puts the employe under no financial obligation whatever, the premiums being paid by the company. The insurance continues in force as long as the employe remains with the company. No medical examination is necessary.

A particularly good feature is that in the event of an employe becoming totally and permanently disabled before the age of sixty he or she receives the proceeds of the policy. Obviously, this feature provides protection at a time when most needed and therefore most appreciated.

Lee Profits Increase

An increase of more than fifty-five per cent in earnings compared with those of the preceding year was revealed in the annual report of the Lee Rubber & Tire Corporation for 1919, published recently. Its net profits for that year after deduction of all charges, including Federal taxes, amounted to $471,805, or $3.14 a share on 150,000 shares of its capital stock outstanding. In 1918 its net profits were $200,348, or $2 a share on the 100,000 shares then outstanding.

The company's net sales for 1919 amounted to $5,583,993, against $4,609,924 and cost of materials, etc., $4,999,949, against $4,347,815. Other income totalled $59,332, and $171,571 was paid out for interest and Federal taxes, against $113,788 for those items in 1918. The balance sheet of December 31 showed total assets and liability of $5,596,269, a gain of nearly $2,000,000 compared with the last preceding statement.

The increase in assets was divided among cash, which was $750,000 higher; accounts receivable, $350,000 higher; inventories, $700,000 higher and some small increases. In the liability column cash and book value of assets acquired in excess of required capital was up $1,500,000; notes payable declined $500,000, and reserves and surplus showed substantial increases.

"Substantial additions to the plant have been made," said John J. Watson, president of the company, in his report to the stockholders, "which will permit us to increase our production and enable us to take advantage of the increased demand for our products, which is the largest in the history of the company. In the past the directors have thought it necessary to retain all profits to increase working capital with which to care for the increasing business, but the company should soon be in a position where the directors can give consideration to the distribution of such parts of the earnings as conditions warrant."

Standard Tire Sales for 1919

The Standard Tire Company, Willoughby, Ohio, manufacturers of Tiger-Foot tires and tubes, has announced that its sales for the first year were $1,200,000. The company was capitalized for $350,000 on March 12, 1919, and on January 2, 1920, paid a fifty per cent stock dividend and increased its capital to $2,000,000, having outstanding at the present time $700,000 common and $175,000 preferred stock.

At a meeting of the board of directors held March 12, an initial dividend was declared on both issues, consisting of 1¾ per cent quarterly dividend on the preferred stock, and 1½ per cent quarterly dividend on the common stock, payable April 1, 1920, to stockholders of record March 25.

Avalon Increases Capital

Officials of the Avalon Rubber Manufacturing Co. of Akron, announced recently an increase of capitalization from $200,000 to $1,500,000.

According to J. S. Hower, president of the corporation formed July, 1917, the increase was made to double the present output of tires made by the company. At present the company is engaged mostly in the manufacture of mechanical rubber goods in its factories located at Barberton and Sterling, Ohio. An extensive building and machinery program for the Barberton factory is planned with the increased capital.

News from the Trade at Large

Syracuse Rubber to Enlarge—Dixie Rubber to Build Plant—Ideal Tire and Rubber to Increase Production—Standard Four Tire Plans Large Increase

United States Promotions

Substantial promotion has come to six of the oldest executives in the sales department of the United States Tire Company through the creation by the company of six important new positions. The entire country has been divided into six large divisions each to be under the direction of a sales manager, working directly under General Sales Manager George S. Shugart.

The six places will be filled as follows: New England sales manager with headquarters at Boston, E. H. Kidder, formerly district manager at Boston; Eastern sales manager with headquarters at New York, E. S. Roe, formerly district manager at New York; Central sales manager with headquarters at Detroit, Thomas R. Burton, formerly district manager at Kansas City; Western sales manager with headquarters at Chicago, P. C. Anderson, formerly district manager at Chicago; Southwestern sales manager with headquarters at Kansas City, Harry H. Hubbard, formerly Western manager for distributors' brands; and Southern sales manager with headquarters at Atlanta, William C. Price, formerly district manager at Atlanta.

The creation of the new positions has for its main purpose the development of the sales organization to a degree commensurate with the company's rapidly expanding production.

In making these appointments the company has followed its custom of filling its good positions with men developed in its own ranks, thus offering an incentive to its workers to remain in the organization and to qualify themselves for better places. It is worthy of note that the average length of service of the six men with the company, or with companies now merged with it, is eighteen years.

"It has been the policy of our company to build up its organization from its own ranks," said General Sales Manager Shugart, in discussing the promotions. "We try to show our men that they have something to look forward to, and that good, long faithful service will be recognized. It is especially fitting that these six veterans in our sales force should have received their promotions on the ninth anniversary of the United States Tire Company, which came into existence March 1, 1911."

Everyone of the six men has been connected with the tire industry since the time when the bicycle fever was at its height. Each has seen the industry gradually broaden under the influence of the automobile, and has been in the thick of things as the automobile industry has forged its way to a leading position in American business. Their personal acquaintanceship includes every important figure in the automobile world and practically all the tire dealers from coast to coast.

Mauthe With Syracuse

Announcement has been made to the effect that F. G. Mauthe has been appointed manager of sales for the Syracuse Rubber

F. G. Mauthe

Co., Inc., of Syracuse, N. Y. Mr. Mauthe was with the Diamond Rubber Co. in 1905 and later became identified with the Dayton Rubber Co. as the New York manager for that firm. Later he became Eastern branch manager for the Goodyear Tire & Rubber Co. and prior to his present connection was acting as special factory representative for the Marathon Tire & Rubber Co.

Gilhooly Sales Manager for Eno

D. J. Gilhooly, known to the tire trade as "Gil," has been promoted to the important position of sales manager for the Geo. W. Eno Rubber Company of Los Angeles, Calif. "Gil" is one of the old-timers in the rubber industry, and one of the best known representatives of the rubber industry in Western America. His experience dates back to the early days of B. F. Goodrich Company and the Firestone Tire & Rubber Company. "Gil" got his start in the tire building departments of these now famous factories.

Twelve years ago Mr. Gilhooly became attracted to the opportunities of the West. He joined forces with the Geo. W. Eno Rubber Company, which has grown to a position of dominance as manufacturers of building materials and repair stocks on the Pacific Coast.

Mr. Gilhooly, until his promotion, has been identified with the Geo. W. Eno Rubber Company as San Francisco branch manager. Since the branch is being discontinued in favor of the new merchandising policy of the company, Mr. Gilhooly will, hereafter, make his headquarters at the factory, and will devote his efforts to the larger executive responsibilities of originating and promoting sales.

It is also interesting to learn that the Geo. W. Eno Rubber Company has radically changed its selling policy from that of "direct to dealer" to a policy of selling "through the jobber." As a result, the entire activity of the factory is being devoted toward larger manufacturing development. A new modern day-light factory is now in course of construction on one of the choicest bits of manufacturing property in Los Angeles.

Amazon Salesmen Meet

Managers and salesmen of The Amazon Rubber Co., of Akron, Ohio, representing territory from coast to coast, met in convention at Akron, March 15, 16, and 17—the first get-together meeting since the new Amazon organization was formed.

Every salesman attending the convention told of an unprecedented demand for tires throughout the country. They greeted with unbounded enthusiasm an announcement by Dr. E. E. Quirk, president of the company, to the effect that much new equipment has been installed in the factory.

The convention concluded with a banquet at the Akron City Club at which Dr. Quirk presided as toast master. Among the guests were officers and directors of the Amazon Company. The speakers included Edward S. Babcox, vice-president of the Akron Advertising Agency Co., and F. A. Oberhue, of United Motor Service, a division of the General Motors Corporation.

Harry T. Hubbard P. C. Anderson Thomas R. Burton E. A. Kidder William C. Price E. S. Roe

Portage Branch Managers Meet

An important sales conference of Portage branch and district managers was held March 5 and 6 at the home office at Barberton, according to a statement issued by John W. Maguire, vice-president and general manager of the Portage Tire & Rubber Company. Much interest and enthusiasm was shown in the various portions of the schedule which was arranged.

The first day was taken up entirely by the sales conference at which Mr. Maguire and Mr. Pasho, general sales manager, spoke. In the evening the branch and district managers and a number of officers and heads of departments attended a dinner at the City Club in Akron. An interesting talk was given by Mr. Maguire, complimenting all present on the loyalty and cooperation which enabled the company to show such a satisfactory balance sheet so far this year, and expressing the hope that the balance of the year would see a greatly enlarged business. Other short talks were made by the managers in which they expressed their entire confidence in the Portage organization and in the sales for their territory.

On Saturday the several department heads spoke to the branch managers on various subjects, among which were: "Credits," by Assistant Treasurer R. J. Cole; "Our Advertising Policy," by Director of Advertising C. S. Thompson; "Efficiency of Operation," by Comptroller H. M. Kerr; "Our Production Plans," by Factory Superintendent J. T. Johnson; and "Our New Service Policy," by J. J. Dettling, manager of the adjusting department.

Those in attendance at the conference were: A. M. Fisher, Atlanta; C. E. Aldridge, Boston; W. J. Shea, Cleveland; J. V. Wedgwood, Chicago; G. H. Snook, Cincinnati; Jack Miller, Dallas; L. R. Vaughan, Des Moines; S. R. Waller, Detroit; F. L. Davies, Kansas City; P. S. Manley, Milwaukee; C. A. Johnson, Minneapolis; B. W. Perks, New York City; C. T. Anderson, Philadelphia; F. N. Hammond, Eastern district manager, and Carl Hoag, special representative.

Brunswick to Triple Output

The contract for construction of the Brunswick - Balke - Collender Company's tire plant addition at Muskegon, Mich., which will triple the output of automobile tires bringing it up to 5,000 a day, has just been let to the National Construction Company. The Osborne Engineering Company of Cleveland, a concern which has a national reputation as tire factory experts, will supervise the construction.

The equipment for this plant will be enormous, the announcement from the Chicago office states. No details as to the size and specifications of the building are made at this time, but it is known that the company has two full blocks to the west of the main plant which is to be used ultimately as building space in the company's expansion plans. A more complete and immediate solution of the city's housing problem is one of the chief obstacles to more rapid developments at the Brunswick, it is understood.

However, the popularity of Brunswick tires has been so great during the past year that the company officials state they were forced to make the extension now provided for. The present output of 1,200 tires a day supplies only a fraction of the business offered, it is stated.

The company also announces that another building program for 1921 has been practically completed, but no details are given at this time. It is understood the extent of this may be influenced by the efforts made locally to build more homes for workmen.

This extension of the Brunswick means much to Muskegon, it being known that experienced tire makers are among the most highly paid workmen in any line. The annual Brunswick payroll now amounts to about $3,300,000 at the local plant and with the new plant in operation, this will doubtless be increased to $4,000,000.

Melvin B. Newcomb Dies

Melvin B. Newcomb, chief engineer of the rubber machinery department of the Wellman-Seaver-Morgan Company, died on Sunday, March 13, after a short illness at his home, 742 West Ave., Akron, Ohio. He was thirty-one years of age.

Mr. Newcomb was born in 1889 in Bridgeton, N. J. He received his mechanical engineering education at the University of Wisconsin. He has been engaged in engineering work with the I. P. Morris Company, Philadelphia; the Allis Chalmers Manufacturing Co., Milwaukee, Wis.; the Wisconsin Engine Co., Corlis, Wis., and the Firestone Tire and Rubber Company, Akron.

In January, 1918, he joined the hydraulic turbine engineering department of the Wellman-Seaver-Morgan Company. A few months later he was appointed chief engineer of the rubber machinery department of the Wellman-Seaver-Morgan Company.

Mr. Newcomb was a member of the American Society of Mechanical Engineers, the Cleveland Engineering Society, and the Akron Engineering Society. He leaves a wife and two young daughters.

Dunlop Announces Addresses

The Dunlop America Limited has sent out an announcement to the effect that on and after April 3 the firm's offices at 19 West Forty-fourth Street, New York, N. Y., will be closed.

In order to avoid delay and expedite business the company requests that mail be addressed to the company at Box 448, Buffalo, N. Y. Telegrams should be sent to the firm at Two-Mile Creek Road, Tonawanda (Buffalo), N. Y. Telephone calls to the company are Buffalo, Bidwell exchange numbers 6120, 6121, 6122, 6123 and 6124. Freight to the company should be sent to the Dupont Siding, Black Rock (Buffalo), N. Y., for N. Y. C. R. R., L. V. R. R. and D. L. & W. R. R. Express should be sent to the Dearborn Station, Black Rock (Buffalo), N. Y. The offices and factory are located at Two-Mile Creek Road, near River road, Tonawanda (Buffalo), N. Y., about one mile north of Buffalo city limits. The factory is reached by the street car marked "Riverside No. 5."

Wood Recovering From Operation

Charles E. Wood, prominent crude rubber broker, 149 Broadway, New York City, also of Akron and Chicago, was operated on March 12 for mastoiitites at Miss Alston's Hospital, 26 West Sixty-first Street, New York City, by Dr. E. Prince Fowler, assisted by Dr. A. Leitner and Dr. J. Herbert Lawson. The operation was successful, and his condition is reported very favorable.

Boone Elects New Officers

The annual stockholders' meeting of the Boone Tire and Rubber Company was held at the factory on March 9 and a new set of officers and directors were elected as follows:

President, W. J. Boyden, Chippewa Falls; secretary and legal advisor, Attorney W. O. Kelm, Chippewa Falls; treasurer, L. A. Fletcher, Chippewa Falls; directors, W. O. Kelm, L. A. Fletcher, W. J. Boyden, J. W. Piotrowski, Chippewa Falls; J. T. Roth, Superior; Mr. Klink, Berlin, Wis.; Mr. Fulton and Mr. Edgel, Sycamore, Ill., and Mr. Culver, Cherry Valley, Ill.

An executive committee was elected consisting of W. J. Boyden, J. B. Piotrowski and L. A. Fletcher. This committee will have full charge of operating the business. The Waco plant where a branch had been started by the company has been disposed of and are going to sell the Sycamore factory. All energies will be devoted toward making the Chippewa factory a paying proposition.

The best of feeling existed among the stockholders under the re-organization and the new officers have the united support of everybody. The plant will be put in operation and the class of men at the head of it speaks for its success. Three-fourths of the stock was represented.

Greater Zinc Oxide Output

In providing increased zinc oxide capacity, for which plans are now under way, the New Jersey Zinc Company will produce zinc oxide in sufficient quantities to meet the increasing needs of the rubber and other industries for this pigment. The news of the company's recently announced building program was received by rubber manufacturers with satisfaction. Already there is under construction a zinc oxide plant in Colorado and a lithopone plant in Pennsylvania and undoubtedly other zinc oxide plants will follow, as required.

According to reliable information those grades of zinc oxide most needed by the rubber industry will be produced in much larger quantities under the new arrangement. It is also contemplated that further additional facilities shall be so located as to insure rubber manufacturers securing prompt deliveries of this product.

Speaking of these plans, E. V. Peters, general sales manager of the New Jersey Zinc Company says: "We fully appreciate the increasing requirements of the rubber industry for zinc oxide and it is our intention to provide facilities that will amply care for such needs. This material has become the universal filler for use in the tire compound and we recognize our responsibility in supplying those quantities necessary to keep pace with the steady increase in consumption of all manufactured rubber goods. Those plants already under construction will be completed as soon as is possible. Before many months have elapsed we expect to be in position to provide zinc oxide in such quantity that the interests of the rubber industry will be amply protected."

Martin Declares Dividend

The Martin Tire Corporation has declared its first semi-annual dividend of four per cent payable on March 20, to stockholders of record, on March 10. James Martin, president of the Martin Tire Corporation has injected up-to-date and aggressive methods into the supervision of the company, with the result that it has been a success from the time of its beginning. L. A. Silberbauer, general manager of the firm, states that the outlook for the future would indicate that business for the coming year will greatly eclipse the performances of the Martin Tire Corporation for the past six months.

MARKETS

Manufactured Rubber Goods

NEW YORK, March 23, 1920.

No recession in prices for raw materials entering into the manufacture of rubber goods has taken place, and rising costs seem to be the order of the day in all branches of the market. The rubber market during the past fortnight has tended to sink, rather than rise for immediate delivery goods, but prices on other commodities used by the rubber trade are following the trend of everything else and are rising.

Much difficulty in shipping is also being experienced, and traffic in and out of the big terminal cities is to a large extent paralyzed. The return of the railroads to private ownership has not improved the situation to any great extent, and supplies of freight cars are totally inadequate to fill present needs. Despite the fact that the railroads have increased the minimum carlot weights on many commodities, they are still unable to give shippers cars when required, and are unable to supply all that are needed. Executives of the railroads are also talking higher freight rates, which will serve to increase present high costs.

EXPORTS

Export houses are looking upon the situation with more hope in view of the recent improvement in exchange but no resumption of general export buying can be looked for for some time yet with present unsettled conditions ruling. One large firm of general exporters failed recently, and many of the large export houses are reported to be having hard going, with all of the markets of the world against them. Foreign operators are still returning to the American market goods bought some time ago.

Imports are increasing on many lines. A cargo of German dyes has been brought into New York, and many other cargoes of foreign manufactured goods have come in. Denmark is sending butter and other dairy and vegetable products here and using the money to buy cotton and other American materials needed abroad.

AUTOMOBILE TIRES

The long-awaited price advances in automobile tires have at last become a reality, and advances have been named by the great majority of companies, all varieties of tires being affected in the advance.

Tire manufacturers are working at top speed, and production is hampered only by the difficulty in obtaining raw materials. Expansion among the smaller companies is reported from all sections of the country.

BOOTS AND SHOES

The continuance of winter weather, with incidental rain and snow storms leads to a continued heavy demand for rubbers. New York City shoe retailers sold out practically all of their stocks during these storms, and a strong demand is looked for when manufacturers open the fall season. The War Department is still offering some quantities of rubbers, arctics, and boots, selling by means of sealed bids, specifying, however, that all of the goods are to be used in this country.

Rubber heels and fibre soles made by the different rubber companies are going extremely well with export buyers, it is reported, and foreign shoe interests are taking these supplies right along, as they are able to finance the shipments. The shortage of leather abroad is responsible for the demand for fibre soles. Domestic buying of rubber heels continues to be active, but the market on fibre and composition soles is still lagging.

There is a strong market for rubber-sole canvas footwear this season and advances in the cost of labor and materials have tended to force the market upward. There is a good demand reported in distributing circles for "known" or advertised brands of tennis, sport, and work shoes made of these materials.

DRUGGISTS' SUNDRIES

There is a strong market ruling on rubber druggists' sundries, due to general high producing costs. Druggists are reported buying only in a small way of the general line of sundries, but there is a good demand for summer supplies coming in. Surgeons' instruments are firmly held, with a good demand along routine lines reported.

MECHANICAL GOODS

There is a fair demand for hose reported, but rising costs of fabrics are forcing the market for finished hose higher. Belting is also meeting with a fair call, with prices ruling high. Manufacturers are figuring on some heavy business with the railroads after supply officials of the roads look the situation over and decide on just what they will need. A heavy buying movement on couplings is looked for. There is a fair inquiry for marine specialties reaching manufacturers.

MISCELLANEOUS PRODUCTS

An active demand for the general list of rubber specialties is reported. Rubber bands are going well, and a good spring buying movement on rubber jar rings has begun. Manufacturers of specialties are expanding their operations after having had their production curtailed during the war as "non-essential" industries. Rubberized fabrics for raincoats are also reported to be selling well.

Cottons, Yarns and Fabrics

NEW YORK, March 23, 1920.

The spot market has continued strong during the past fortnight, and new high levels have been reached, March option having gone above 40 cents a pound. There has been considerable profit taking on the rise, but buying by trade interests has lent a strong technical position to the market. Prices in Southern markets continue to be somewhat above those ruling on the local exchange, strict middling having sold in North Georgia at 42 cents per pound, with the market in other sections well above 40 cents per pound. Stocks in the Southern markets are not large, and there is no selling pressure in evidence in any of the Southern markets.

Southern interests are not sending much cotton into New York, even at prevailing high prices, as the spot markets throughout the South are strong and there is an active demand for the cotton there. Planters are in a very strong condition financially, and are able to hold their old crop cotton until they get their price.

May and July options crossed new high levels for the crop year, the former selling above 38 cents per pound while the latter has passed the 35-cent mark. The gain on May option was subsequently lost.

The market sold off on the publication of the Census Bureau's report on actual ginnings of the 1919 crop, issued on March 20, which made the output 11,258,117 "running" bales, the equivalent of 11,329,775 bales of standard weight, 500 pounds each. The ginnings were much more than the trade in general had expected. The report was especially interesting because it refuted many of the statements of agitators in the South, who demanded a Congressional investigation of the Department of Agriculture last December, when the Department estimated the final crop at 11,030,000 bales, which some Southern interests claimed was a deliberate move to bear the market. It now appears that the Department underestimated the crop by fully 300,000 bales.

Closing quotations March 20 were as follows:

March	40.35@40.44
May	37.87@37.90
July	35.10@35.19
October	32.11@32.15
December	31.33@31.35
January	30.87@30.90

EGYPTIAN COTTON

There is a steady demand for Egyptian cotton in the American market and a strong tone is in evidence. The trade is greatly interested in the activities of the market at Alexandria, which is a wild one at present.

AMERICAN-EGYPTIAN COTTON

There is a steady market ruling on American-Egyptian cotton, and there is an active demand reported, with prices holding steady. Southern California is reported to be planning a considerable expansion of its long-staple cotton growing, and tire fabric makers can soon look to this part of the country for good grades of tire yarns.

SEA ISLAND COTTON

No stable basis of quotations on Sea Island cotton is reported, and prices paid

are determined chiefly by the quality of the staple and the seller. There is a good demand for remaining holdings of good grades, and extra fine Islands is holding all the way from $1.00 to $1.40 per pound. French spinners have been in the market for this top grade of cotton, and have paid big prices to get the choicest stocks. Fine to fully fine is quoted at from 85 to 88 cents per pound in Southern spot markets, while No. 2 and choice grades are quoted at 80 and 82 cents per pound. Holders are not pressing for sale on the good grades.

TIRE FABRICS

Spinners of fabrics are showing much interest in reports from Alexandria to the effect that the cotton market there has broken. American spinners would welcome relief from the abnormally high prices ruling on the Egyptian long staple. There is an active demand for the general list of tire fabrics, and the market continues unsettled, with quoted prices varying, according to costs of raw materials by the different spinners. The mills are sold up for some time ahead, and are not looking for any business on spot goods in quantities.

HOSE AND BELTING FABRICS

Prices on hose and belting fabrics have increased somewhat during the past fortnight, and the market is on a firm basis, with supplies well sold up and demand active. Hose and belting fabrics are strongly held at 75½ and 78 cents per pound, price depending upon seller and quantities. The market for enameling holds unchanged at 88 cents per pound, while shoe ducks are quoted higher at 92 cents per pound. Single filling ducks hold quotably unchanged at 34 and 36 cents per pound, but the market on double filling is stronger at 38½ cents per pound.

DRILLS, SHEETINGS AND OSNABURGS

Trading in drills and sheetings continues confined within second hand channels, and the mills are still temporarily out of the market insofar as spot trading is concerned. Competition among resellers has lowered the market on some materials, as noted in the table given below. There is a fair demand for all kinds of finished cotton goods in the local market.

BURLAPS

A quiet tone features the spot burlap market, and Eastern importers report an easy undertone ruling, with buying light. Consumers are taking goods only on a hand to mouth basis, and accordingly no buying in large lots is being done, which leaves the market in an unsettled position as to spot prices. No further news from primary markets has been received.

TIRE FABRICS

17¼-ounce Sea Island, combed	sq. yd.	2.25@2.40
17¼-ounce Egyptian, combed		2.00@2.15
17¼-ounce Egyptian, carded		1.80@1.90
17¼-ounce Peelers, carded		1.25@1.30
17¼-ounce Peelers, combed		2.25@2.35

DUCKS

Belting (pound basis)	lb.	.75½@ .78
Hose (pound basis)		.75½@ .78
Enameling		.88 @ ..
Shoe Ducks		.92 @ ..
Single filing	yd.	.34 @ .36
Double filing		.38½@ ..

DRILLS

37-inch 2.35-yard	yd.	.32½@ .33
37-inch 2.75-yard		.29 @ ..
37-inch 3.00-yard		.28 @ ..
37-inch 3.25-yard		.27½@ ..
37-inch 3.50-yard		.25½@ ..
37-inch 3.95-yard		.23½@ .24
37-inch 2.00-yard Southern		Nominal
37-inch 2.00-yard Northern		Nominal
40-inch 2.40-yard Southern		Nominal
40-inch 2.40-yard Northern		Nominal
52-inch 1.90-yard Southern		Nominal
52-inch 1.90-yard Northern		Nominal

SHEETINGS

40-inch 2.35-yard	yd.	@
40-inch 2.50-yard	.33	@ .35
40-inch 2.85-yard	.31	@ .33
40-inch 3.00-yard	....	@ ..
40-inch 3.25-yard	....	@ ..
40-inch 3.75-yard	.27	@ ..
40-inch 3.60-yard	.28½	@ .29½
40-inch 4.25-yard	.24	@ ..

***Note.*—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.**

BURLAPS

(Carload lots)

		Cents Per Yard	
7 -ounce	40-inch	11.00@	....
7½-ounce	40-inch	.... @	....
7½-ounce	45-inch	11.00@	11.25
8 -ounce	36-inch	.... @	....
8 -ounce	40-inch	10.25@	....
8½-ounce	40-inch	12.00@	12.25
10 -ounce	36-inch	.... @	....
10 -ounce	40-inch	15.25@	....
10 -ounce	45-inch	Nominal	
10½-ounce	40-inch	15.50@	....

Chemicals and Compounding Materials

NEW YORK, March 23, 1920.

No let-up in price advancing has yet been noticed, and the market apparently has not yet reached the peak of prices on the general list. Price trend during the past fortnight has been mostly upwards, while price recessions have been few and insignificant. Increasing shortages in many lines are reported, due to combinations of shortage of raw materials, labor difficulties, and transportation troubles.

Although export buying is at a low ebb, no instances of selling pressure of chemicals and compounding materials have been noted, despite the fact that this condition has been epidemic in other lines for some time past. Far from seeking export trade, American chemical producers are turning down much of the foreign business that is offering, as they are unable to keep production large enough to handle all of their domestic accounts.

EXPORTS

Despite a little more firmness in foreign exchange, which has manifested itself from time to time during the past few weeks, the demand for American chemicals and compounding materials abroad has not increased. Although such American products are undoubtedly wanted in various European countries, consumers abroad cannot buy the materials without funds, and the arranging of credits is the stumbling block which foreign buyers are finding impossible to overcome.

One exception to this rule has been reported. Foreign buyers have taken large stocks of caustic soda from the American market, and consequently an acute shortage of this material has been brought about, with the result that the market has been advanced considerably and spot stocks are about used up. Manufacturers are well booked up in advance, and are not taking on any additional business, holding the scant spot stocks still remaining at $6.13 and $6.50 per hundredweight.

BENZOL

There is a strong tone featuring the market for benzol, and the market is stronger on spot at 32 and 34 cents per pound under light offerings. Producers are not able to keep production of this or other crude coal tar products up to the demand, and are allotting the present production to their customers. The top price quoted above is generally the asking price of second hands.

LITHARGE

Increasing firmness in the market for pig lead is keeping this market in a firm position, and the tendency of the market is upwards. American powdered in casks is strongly held at 11¾ and 12¾ cents per pound on the spot.

LITHOPONE

No changes in lithopone prices have been reported during the past fortnight, but producers are talking higher prices on spot goods. Producers are not booking any further contracts, having their total possible production signed up for several months to come yet, and are holding the small stocks they have to offer on spot at 7½ to 7¾ cents per pound. Producers are reported to be contemplating an advance in the spot prices in order to check buyers.

WHITING

Firmness is reported from all quarters of the market for whiting, and producers of this product now report that the demand is so great that they are unable to handle all of the orders offered them. Prices are steady at $1.40 for commercial, $2.00 for English cliffstone, and $1.75 for American paris white.

BARYTES

Producers are maintaining the market on the basis of $23.00 and $25.00 per ton on contracts, while pure white for prompt shipment is held at $34.00 and $36.00 per ton. Producers report the shipping situation to be well-nigh hopeless. They are unable to obtain sufficient cars in the first place, and are not assured of prompt delivery even if the cars are forthcoming. For this reason, they are not taking on all of the contract business offered fearing to be too much oversold should the transportation situation take a turn for the worse, if such a thing is possible.

ZINC OXIDE

The market is closely sold up, and producers are bending every effort to still further increase their production to take care of the ever increasing demand for their product. Some difficulty in getting shipments to consuming market is being experienced. Prices rule firm at 11½ and 11¾ cents per pound for French process, red seal, 12½ and 12¾ cents for green seal, and 13½ and 13¾ cents per pound for white seal.

GLUES

The situation is a firm one, and although prices hold quotably unchanged, market sentiment is bullish. Extra white is held at 20 to 35 cents per pound, cabinet at 25 to 36 cents per pound, low grade cabinet at 20 and 25 cents, foot stock at 13 and 18 cents, brown foot stock at 12 and 16 cents, and common zone at 10 and 15 cents per pound.

OILS

Refined corn oil, and the deodorized grade of corn oil, have been defined in separate sections in trading rules of the New York Produce Exchange, this action being taken as those not in a position where they can deodorize the oil wished to have the oils classified separately. A quiet market on corn oil is reported, with the market on crude in barrels, New York, quoted at 17.81 cents per pound, in tanks 16.50 cents, and refined in tanks at 21.56 cents per pound. A steady tone features the market for palm oil, with

Lagos held at 15¾ cents per pound and Niger at 15 cents. Blown rapeseed oil is steady at $1.80 per gallon in barrels, with refined held at $1.65. China wood oil has shown more firmness, the market being held on the basis of 24½ to 25 cents per pound, with offerings light.

Acetone, carlots	lb.	.13½ @	.14
smaller lots	lb.	.15 @	.16
Accelerator, in drums	lb.	.85 @	1.00
Acids, Acetic, 56%	cwt.	6.00 @	6.50
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	1.75 @	2.00
Muriatic, 22 deg.	cwt.	2.50 @	2.75
Nitric, 42 deg.	cwt.	7.00 @	7.50
Nitric, 40 deg.	cwt.	6.75 @	7.25
Sulphuric, 60 deg.	ton	18.00 @	19.00
Tartaric, crystals	lb.	.69½ @	—
Aluminum Flake	ton	29.00 @	31.00
Aniline oil, bulk basis, Contract		— @	—
Imported		Nominal	
Domestic		.32 @	.35
Antimony, metal spot	lb.	.11¾ @	.12
Oxide	lb.	.12½ @	.13
Sulphuret, red	lb.	.25 @	.30
Sulphuret, golden	lb.	.30 @	.35
Sulphuret, crimson	lb.	.45 @	.50
Needle, powdered	lb.	.12 @	.12½
Asbestos	ton	35.00 @	45.00
Asphaltum, Egyptian	lb.	.30 @	—
Domestic	ton	.30 @	.40
Barium sulphate, technical		.04½ @	.05
Sulphide	lb.	.07¼ @	.07½
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	34.00 @	36.00
off color, domestic	lb.	— @	—
Southern, f.o.b. mills		23.00 @	25.00
Western, f.o.b. mills		23.00 @	25.00
Benzol, pure, bulk	gal.	.32 @	.34
Beta-naphtol, sublimed	lb.	.70 @	.72
resublimed	lb.	1.05 @	1.10
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.25
Lampblack R. M.	lb.	.15 @	.45
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian		.90 @	—
Soluble	lb.	.95 @	—
Ultramarine	lb.	.15 @	.50
Browns, Umber, Turkey, burnt, powdered	lb.	.05¾ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium sulphide, yellow	lb.	1.75 @	1.80
Carbon bisulphide, bulk	lb.	.06 @	.07
Bisulphide	lb.	.06 @	.07
tetrachloride, drums	lb.	.10½ @	.11
Caustic Soda, 76%	cwt.	6.13 @	6.50
Chalk, precipitated, extra light	lb.	.04½ @	.05
heavy	lb.	.03½ @	.04
China clay, domestic	ton	8.50 @	20.00
imported	ton	18.00 @	23.50
Fossil flour	lb	.03¾ @	.05
Gilsonite	ton	55.00 @	—
Glue, extra white	lb.	.35 @	.40
medium	lb.	.30 @	.35
low grade		.20 @	.25
foot stock		.13 @	.18
brown foots		.12 @	.16
common bone		.11 @	.15
Glycerine, C. P. (drums)	lb.	.23½ @	.24
cans		.25½ @	.26
Graphite, flake (bbl.)	lb.	.14 @	.25
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.39 @	.60
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.40 @	1.60
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.09¾ @	.10¼
Lime flour	lb.	.01¾ @	.02
Litharge (casks)	lb.	.11¾ @	.11¼
English	lb.	— @	—
Lithopone, domestic, bbls.	lb.	.07½ @	.07¾
in bags	lb.	.07¼ @	—
Magnesia, carbonate	lb.	.17 @	.21
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.28½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.35½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.36½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.38½ @	—
machine (steel bbls.)	gal.	.47½ @	—
Oil corn, crude factory	cwt.	17.81 @	—
corn, ref. (bbls.)	cwt.	21.56 @	—
linseed (bbls.)		1.87 @	—
in carloads, spot		1.84 @	—
tank cars		1.77 @	—
Oil palm, Lagos	lb.	.15¾ @	—
Niger		.15 @	—
pine, yellow	gal.	1.21 @	—
rapeseed, refined	gal.	1.65 @	—
rapeseed, blown	gal.	1.80 @	—
rosin, first rectified	gal.	.93 @	—
second run		.95 @	—
tar (commercial)	gal.	.36 @	.38
Orange mineral, Amer.	lb.	.15½ @	.16½
imported	lb.	— @	—
Paraphenylenediamine	lb.	2.50 @	3.00
Petrolatum, bbls., amber	lb.	.06 @	.07
pale yellow	lb.	.06½ @	.07
Pine tar kiln	bbl.	14.50 @	—
Pitch	bbl.	8.50 @	—
Plaster of paris	bbl.	2.00 @	3.00
Red Tuscan	lb.	.22 @	.30
red (American)	lb.	.14 @	.16
Indian (English)	lb.	.14 @	.16
Standard	lb.	— @	—
Rosin (common to good) 280 lbs.	bbl.	17.25 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	— @	—
T. N.	lb.	1.40 @	1.45
Bleached ordinary	lb.	1.25 @	1.30
Bleached bonedry	lb.	1.55 @	1.60
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	12.00 @	17.50
Starch, corn, powd.	cwt.	5.97 @	6.23
pearl		4.97 @	5.19
Jap, potato, duty pd,	lb.	.09½ @	—
Sulphur, crude	ton,	— @	—
100 pounds		— @	—
roll		3.20 @	—
commercial superfine		2.00 @	2.25
Talc, American	ton	20.00 @	40.00
French	ton	— @	—
Toluol, pure, in drums	gal.	.30 @	.32
commercial		.30 @	.32
Tripolite earth	lb.	.01¼ @	—
Turpentine, pure gum spirit	gal.	2.16 @	—
wood	gal.	1.60 @	—
Venice, artificial	gal.	.15 @	.16
true		4.50 @	4.75
Vermilion, English	lb.	1.35 @	1.45
American		.25 @	.30
Wax, beeswax, crude yel.	lb.	.35 @	.40
refined		.39 @	.42
Bayberry		.40 @	.41
ceresin, white	lb.	.15 @	.16
yellow		.15 @	.16

Scrap Rubber

NEW YORK, March 23, 1920.

Collections of boots and shoes are reported to be very heavy, and the market has eased off somewhat on this stock, prices being held on the basis of 7.75 to 8 cents per pound on spot. Demand for the general list of scrap rubber is reported as quiet, with consumers operating in a hand to mouth fashion and covering only their routine consuming requirements. More buying is expected later on in the spring, however.

	Cents per Pound.		
Boots and shoes	7.75	@	8.00
Arctics, trimmed	6.00	@	6.25
Arctics, untrimmed	5.00	@	....
Tires—Automobile	3.75	@	4.00
Bicycles, pneumatic	2.50	@	3.00
Mixed hose	1.00	@	1.75
Air brake	....	@	....
Inner tubes, No. 1	....	@	....
Inner tubes, No. 2	10.00	@	11.00
Red tubes	9.50	@	10.00

Crude Rubber

NEW YORK, March 23, 1920.

The market for crude rubber is a sagging one at the present time, and prices have lessened somewhat during the past two weeks. Most of the buying now being done is for speculative account and but little buying is being done by trade interests, which are apparently holding off in the hope of still lower prices. The market is extremely unsettled with respect to prices, and asking rates differ with various sellers, according to the circumstances governing each case. Heavier arrivals from the Far East are reported, arrivals in one day of last week totaling 43,373 cases and 4,377 barrels of Plantation grades.

Futures are still held at a premium over spot goods, this advance ranging from 2 to 3 cents per pound, according to seller. Firmer advices from the London and Singapore markets are responsible for this strength in futures. The market also becomes firmer from day to day, in sympathy with the trend of sterling exchange, or weakens proportionately. Spot smoked sheets ribbed are offering on spot on the basis of 47 cents per pound, with smoked sheets plain held at 46½ cents. First latex crepe is fairly steady at 47½ cents per pound, Para up river fine is held at 41½ and 42 cents, coarse at 31½ cents, and medium at 40½ cents per pound. Islands fine are quoted at 42 cents, with coarse selling at 21½ cents.

	Cents per Pound.		
Para—Up-river fine	.41½ @	.42	
Up-river medium	.40½ @	.41	
Up-river coarse	.31½ @	—	
Caucho ball	.33 @	—	
Islands fine	.42 @	—	
Islands coarse	.21½ @	—	
Cameta	.20¾ @	.21	
Madeira, fine	.44 @	—	
Knapsack	— @	—	
Ceylon—Smoked sheets, ribbed	.47 @	—	
Smoked sheets, plain	.46½ @	—	
First latex pale crepe	.48½ @	—	
Amber crepe	Nominal		
Clean brown crepe	— @	—	
Rio Nunez string	.40 @	—	
Palembang	.13 @	—	
African	.33 @	—	
Prime Surinam sheets	— @	—	
Centrals—Corinto prime	.32 @	.32½	
Esmeralda, prime	.32 @	.32½	
*Balata, sheets	— @	—	
Guayule, wet	.27 @	—	
Balata, block, Panama	.57 @	—	

* Nominal.

International Auto Shows in Belgium

Three International Exhibitions of Automobiles and Accessories will be held this year at Antwerp, Belgium, on the occasion of the international Olympic Games, which are expected to draw a large crowd of visitors to Antwerp from all over the world.

The first exhibition will take place from May 15 to June 13, and will include motors, cars, tires and wheels, mechanical parts and separate pieces, and all sorts of accessories connected with the automobile industry.

The second exhibition runs from June 26 to July 25, and will make a specialty of commercial vehicles, agricultural tractors, camions and motors.

The third show will take place from August 7 to September 15, and will be devoted to motorcycles, side-cars, bicycles, etc., including accessories.

Temporary free entry will be obtained from the Belgian Custom House for foreign exhibits, and every possible facility will be given to foreign exhibitors. Application should be made at once in order to secure space. All information and application forms may be obtained from James Gustavus Whiteley, Belgian Consul, 223 West Lanvale street, Baltimore, Md,, who has been appointed special representative of the Antwerp International Exhibition.

Lincks Opens in New York

Announcement has been made by George H. Lincks that he has opened for business at 106 Wall Street, New York. This firm will act as exporter, importer, dealer and distributer of gums, asphalts, pitch, chemicals, oils, waxes, driers, shellac and substitutes, lime hardening powder, earths, clays, fillers, dry colors, rubber substitutes and other like products. The firm will specialize in raw materials for rubber goods.

American Rubber Patents

ISSUED MARCH 2, 1920.

1,332,272—To Murray Schick, Salt Lake City, Utah. Attachment for automobile and other wheels.

1,332,309—To Pickins A. Sawyer, Memphis, Tenn. Puncture-proof inner tube for tires.

1,332,362—To Milton Seymore Schwartz, Brooklyn, N. Y. Anti-skid attachment for wheels.

1,332,729—To Charles E. Johnson, Highland Park, Mich. Tire alarm.

1,332,812—To Ralph B. Day, Akron, Ohio, assignor to the Goodyear Tire & Rubber Co., Akron, Ohio. Method and apparatus for removing tires from cores.

1,332,816—To James H. Douglass, Norfield, Mass. Resilient tire.

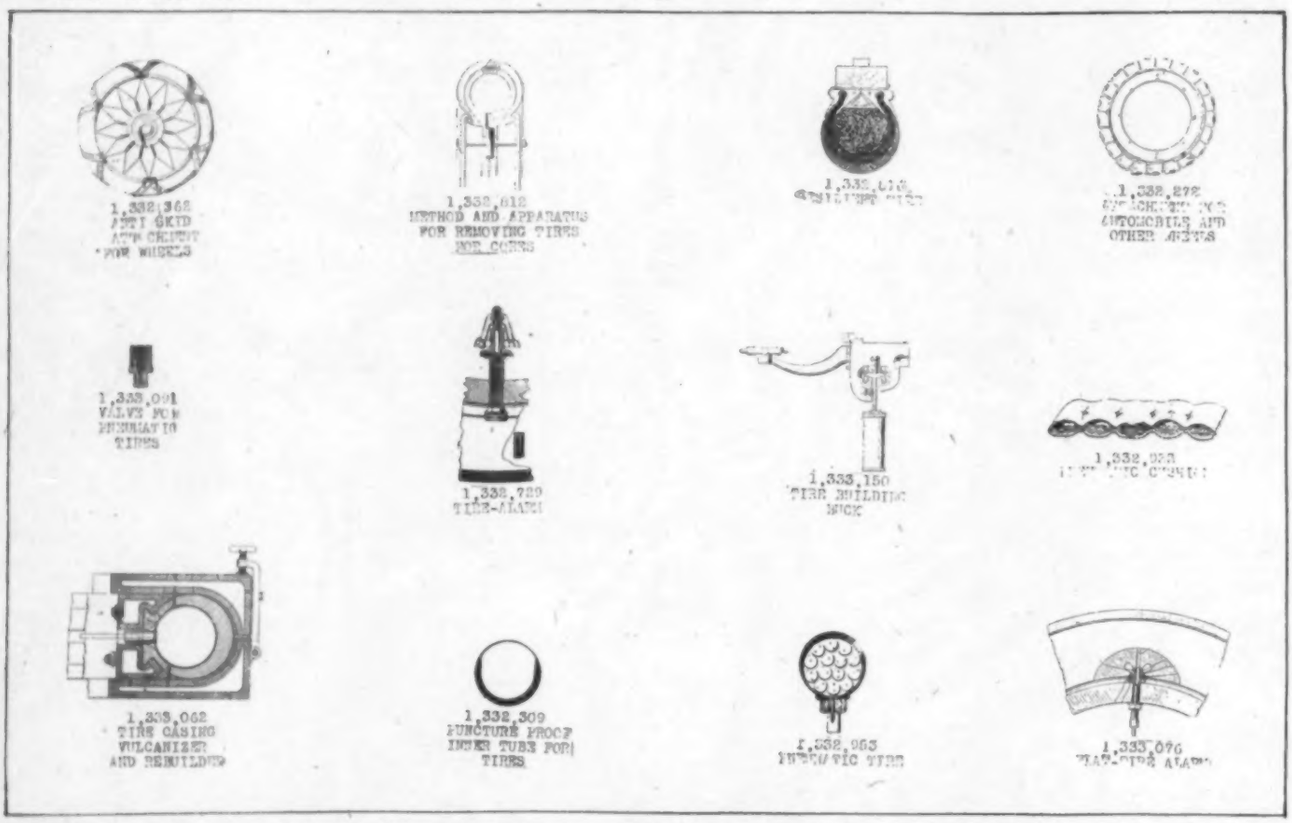
nearly six cents a pound under March appearing attractive to those who are impressed with the continued strength of spots, while buying of the next crop positions has been due to the backwardness of the season and fear of scarcity of labor.

There is little to add to the arguments we have been advancing as to the remainder of the present season. Exports continue on a fairly large scale and are now about 1,500,000 bales ahead of last year, with the exchange situation improving rapidly, and sentiment on that

Egyptian Cotton Conditions

The following letter, dated Alexandria, February 20, has been received by the Alexandria Cotton Company, Ltd., of Boston, Mass.:

We have experienced during this week the most widely fluctuating markets of the year, prices moving several dollars up and down each session. The extremes touched for March have been $198 per cantar and $165; at the close heavy speculative buying gave fresh stimulus to the market and pushed March back again to $181.50 and November to $140, i. e., $1 and $0.50 respectively lower than a week ago.



1,332,847—To William J. Kent, Brooklyn, N. Y., assignor to Revere Rubber Co. Process for shaping vulcanizable plastics.

1,332,926—To Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Company. Rubber composition and process for the production thereof.

ISSUED MARCH 9, 1920.

1,332,933—To Edwin S. Sykes, West New Brighton, N. Y., assignor to Rubber Regenerating Company. Pneumatic cushion.

1,332,953—To William H. Richards, Knoxville, Tenn. Pneumatic tire.

1,333,062—To William B. Coats, Fairbault, Minn. Tire-casing vulcanizer and rebuilder.

1,333,076—To Lee Hofmeister, Milwaukee, Wis. Flat-tire alarm.

1,333,091—To Marshall J. Payne, Staunton, Va., assignor to the Payne Valve Corporation, Roanoke, Va. Valve for pneumatic tires.

1,333,150—To Harry F. Bartlett, Muskegon, Mich. Tire building rack.

Cotton Market Conditions

The following bulletin relative to cotton market conditions was issued by A. Norden & Co., Cotton Exchange Building, New York, on March 11:

The market has again had a firm undertone and quite a further net advance has been established, the strength of the early positions to which we have been referring having been communicated to the whole list, the discount of July of point almost as cheerful as it was disconsolate a few weeks ago.

Interest in the new crop positions is now increasing rapidly, but the factors involved are still so uncertain that no decided opinion can be formed as yet. There was a little wave of selling on an estimate that the acreage will be increased nine per cent, but the effect was only momentary, the continued cold, wet weather having brought in heavy buying of October. On the whole we think that while sales of new crops might become advisable in due course these can probably be made to better advantage later on, and for the immediate future we would rather buy on slight declines.

Miller Factory Additions

(Special Akron Correspondence)

Additions to the Miller Rubber Co. plant at Akron, costing $315,000, have been authorized by directors. One addition is to be made to the refrigerating plant where the water used in the tire factory is cooled. Another will be made to Plant 17. The addition to Plant 17 will be four stories high with provision for three additional stories and will be ninety-seven feet wide and 250 feet long.

The spot market has been very dull, less business having been done than in any week since October and quotations compared with last week's show substantial decreases all round. F. G. F. Sakellarides was bought at $3 to $4 above futures, whereas a few days ago it was eagerly sought after at $8 to $10 above.

There is no doubt that the present high level of prices has caused an appreciable falling off in the demand and had it not been for the recent huge speculative buying which emanated principally from wealthy native merchants, this dullness of the shop market would have been reflected in the futures market to a considerably greater extent.

Although arrivals from up-country have this week shown low figures, ginning factories in the interior continue to receive cotton and we may expect fairly heavy arrivals for some weeks to come.

Fisk Declares Dividend

The directors of the Fisk Rubber Co. have declared a dividend of twelve per cent, payable in quarterly instalments of three per cent (75 cents a share), the first payment to be made on April 1 to holders on record March 15.

NATIONAL U.S.A. QUALITY

INTERMEDIATES

We specialize in Intermediates of the highest quality, carefully and scientifically produced, each for its special purpose. The "National Quality" trade mark is your safeguard.

Aniline Oil
Thiocarbanilid
Meta-Toluylene-Diamine
Para-Phenylene-Diamine
Para-Nitroso-Dimethyl-Aniline

Intermediates Department

NATIONAL ANILINE & CHEMICAL CO., Inc.

NEW YORK
21 Burling Slip

AKRON, OHIO
711 Peoples Savings & Trust Bldg.

CHICAGO, ILL.
357 W. Erie Street

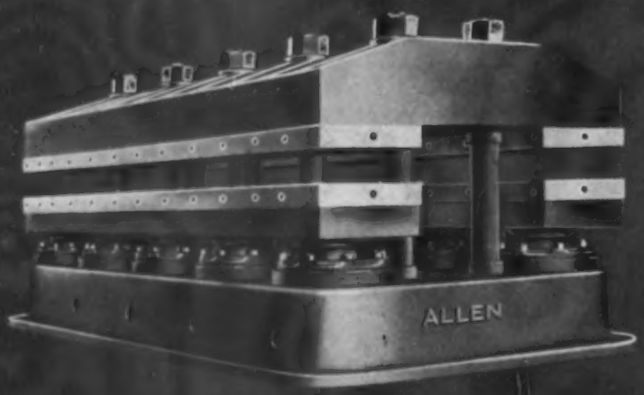
F. R. Henderson & Co.

IMPORTERS

Crude Rubber

NEW YORK CITY AKRON, OHIO

Hydraulic Presses



We build many types of presses to meet all conditions.

Let us estimate on your requirements.

ALLEN MACHINE CO. - - - Erie, Penn'a

Send for Catalogue B
"Rubber Working Machinery"

Sales Offices
Ohio Building, Akron, Ohio
17 West 42nd St., New York City

K KLEAN-KUTT K

K-K Kup Head
Rubber Heel Nails

with CUPPED heads

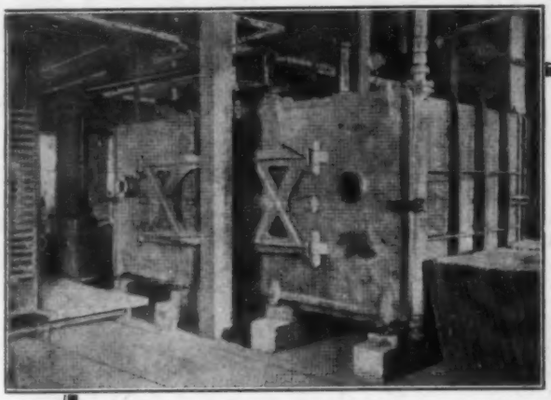
—which prevent nail set from slipping and enable worker to drive with sureness and ease. Another feature of USMC **Klean Kutt** nails is the centre stickpoint which gives additional holding power, because it **clinches with a curl.**

Klean Kutt Nails for Every Purpose

- K-K Channel Nails
- K-K Tack Point Channel Nails
- K-K Tapping Nails
- K-K Shoe Nails
- K-K Slivers
- K-K Miners' Tacks
- K-K Hob Nails
- K-K Kup Head Rubber Heel Nails
- K-K Rubber Top Lift Nails
- K-K Wood Heel Attaching Nails
- K-K Quilting Tacks
- K-K Shank Tacks
- K-K Soling Nails
- K-K Pegging Nails
- K-K Curl Nails
- K-K Curl Rubber Heel Nails
- K-K Cobbling Tacks

UNITED SHOE MACHINERY CORPORATION
BOSTON, MASS.

USMC



DEVINE
VACUUM CHAMBER
DRYERS

This method of drying sheet rubber as it comes from the washer has been accepted as the best and most economical process by all the leading rubber companies in this country and Europe.

The installation pictured here is located in the plant of Madison Tire & Rubber Co., and has greatly helped in the production of their high-grade tires.

Write for Bulletin 101-A.

J. P. DEVINE COMPANY

1362 CLINTON STREET BUFFALO, N. Y.

NEW YORK CHICAGO LONDON HAVANA MANILA

Established 1856

FRAZAR & CO.

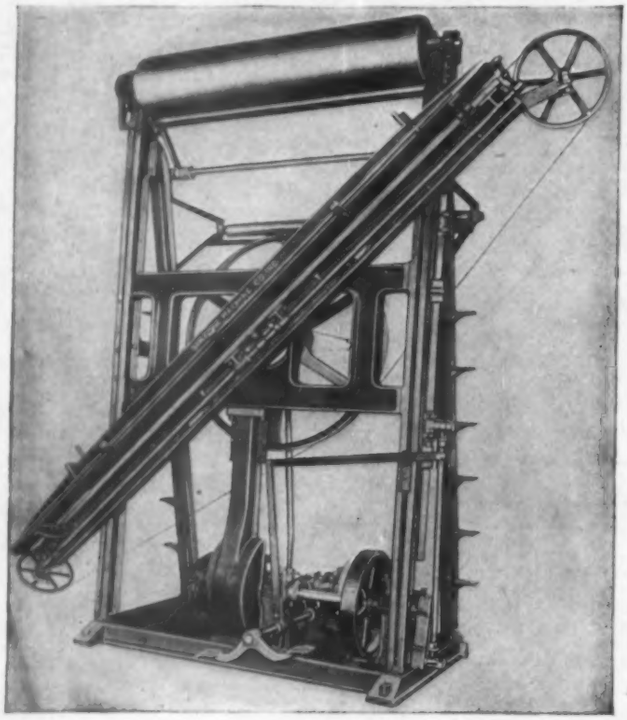
30 Church Street, New York, N. Y.

STATES BRAND PRODUCTS

RED SULPHURET OF ANTIMONY
HEAVY CALCINED MAGNESIA
LIGHT CALCINED MAGNESIA
ZINC OXIDE
MINERAL RUBBER COMPOUNDS
ORGANIC ACCELERATORS

SAN FRANCISCO	AKRON	BOSTON	TRENTON
J. M. RODDIE & CO.	J. A. KENDALL	F. L. MOSES	E. B. FULPER
524 Washington St.	2nd Natl. Bld	6 Beacon St.	705 Am. Mechanics' Bldg.

FOR THE PURPOSE OF SERVING OUR PATRONS WE MAINTAIN A MODERN RUBBER LABORATORY IN CHARGE OF A COMPETENT TECHNICAL STAFF



Front View at 45 Degrees Pat. No. 942164.

THE Bolton Vertical Bias Cutter

If speed is wanted,
If quickness in adjustment is wanted,
If accuracy is wanted,
If low cost of operation is wanted,
If efficiency is wanted,
If simplicity is wanted,
If floor space is wanted,

Then Install This Remarkable Bias Cutter

SPADONE MACHINE CO.
NEW YORK

Francis Shaw & Co., Ltd., Manchester, England, Manufacturers and Selling Agents for Great Britain and British Colonies, excepting Canada

WHEN ALL ADVERTISERS demand their money's worth, all publications will provide circulation reports verified by the Audit Bureau of Circulations.

It is one of the mysteries of the advertising world that while all manufacturers demand verification of weight and quality in the material purchased, some of them still buy advertising space without knowing what they are paying for.

Such advertisers, however, are now exceptional. Most of them demand verified A. B. C. circulation statements before placing contracts.

In the case of THE RUBBER AGE AND TIRE NEWS the demand is immediately met. THE RUBBER AGE AND TIRE NEWS is a member of the Audit Bureau of Circulations.

"DIAMOND FIBRE PRODUCTS *have been standardized by leading Rubber Manufacturers*"

Cut Production Costs **Protect Your Product**

Diamond-F

Use Diamond-Fibre

Compound Boxes, Tube Seasoning Trays, Bulb Trays, Treadboards, Cementing Boards, Fibre Books, Tote Boxes, Trucks, Barrels, Etc.

They protect your rubber product in the process of manufacture and reduce production costs. They are rapidly supplanting products made from other materials at less cost and with better results. In fact, they have been standardized by leading rubber manufacturers.

Diamond Fibre is specially suited for use in rubber manufacture because it is so hard, dense and tough that no ordinary force can make it dent, crack, split or splinter. The surface is smooth and flawless. It is unusually high in dielectric, compression, shearing and tensile strength. It combines great strength with light weight (lighter than aluminum). Unaffected by ordinary solvents or oils. Actually improves with age.

We are glad to co-operate with rubber manufacturers in the solution of their production problems. It will pay you to investigate. **Write for Special Booklet.**

Diamond State Fibre Company

Dept. No. R. A.

Bridgeport, Pa. (Near Philadelphia)

Offices in Principal Cities

MILLS AND FACTORIES; *Bridgeport, Pa., W. Conshohocken, Pa.; Elsmere, Del.; Chicago; Toronto; London*

RECLAIMED RUBBER

THAT HAS STOOD THE TEST FOR YEARS

Special GRADES for the following TRADES:

INSULATED WIRE
BOOT *and* SHOE
MECHANICAL—AUTO TIRE
PROOFING
HARD RUBBER

We will cheerfully furnish samples upon request

Somerset Rubber Reclaiming Works

NEW BRUNSWICK, N. J.

Factory—East Millstone, N. J., Somerset County

JENCKES SPINNING COMPANY

PAWTUCKET, R. I.

Manufacturers of

TIRE FABRICS

made from

Sea Island, Egyptian and American Cottons

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

PASSAIC COTTON MILLS AMERICAN TIRE FABRIC CO.

WILLIAM L. LYALL, President and Treasurer
THOMAS M. GARDNER, Secretary

HENRY V. R. SCHEEL, Assistant Treasurer
T. J. KELLY, Factory Manager

BRIGHTON MILLS

PASSAIC, NEW JERSEY

Tire Fabrics of Sea Island, Egyptian and Peeler Cottons

Special Constructions for Special Purposes Where Quality and Service are Foremost Considerations

ALL GOODS SOLD DIRECT

ONLY OFFICE
PASSAIC, NEW JERSEY

J. H. LANE CO.

334 FOURTH AVE. NEW YORK

TIRE FABRICS

GREY GOODS

CHICAGO YARNS BOSTON

TIRE FABRICS

Made of Yarns of Our Own Spinning, and with
Machinery of Latest and Most Approved Type

The Fabric for Endurance

MANHASSET MFG. COMPANY, Providence, R. I.

DRUGGISTS' SUNDRIES
RUBBER BANDS
COATED CLOTH

AUTO TOP MATERIAL
MACKINTOSHES
RUBBER SURFACE CLOTHING

HODGMAN RUBBER COMPANY

CIRCULARS AND PRICES SUBMITTED UPON REQUEST

EXECUTIVE OFFICES AND FACTORY
TUCKAHOE, N. Y.

NEW YORK SALES OFFICE 8 W. 40th STREET

ANTIMONY SULPHURET

QUALITY

VERMILLION CRIMSON GOLDEN GOLDEN CRIMSON

is Pre-eminent

If Your Dealer Cannot Supply You Write Us Direct

RARE METAL PRODUCTS CO.

BELLEVILLE WORLD'S LARGEST MANUFACTURERS NEW JERSEY

J. SPENCER TURNER CO.

56 WORTH ST., NEW YORK

BOSTON CHICAGO HAMILTON, CAN. MANCHESTER, ENG

TIRE FABRICS

OF EVERY DESCRIPTION

HOSE AND BELTING DUCK COTTON YARNS

MARLBORO COTTON MILLS

McColl, S. C.

Tire Fabrics

TIRE FABRICS AND CORD

Combed Sea Island, Combed and Carded Peelers and Egyptians. "48 to 90 inch widths." All Fabrics made from our own make of Yarn.

Yarns

YARNS

4s to 60s Combed and Carded single and ply. Warps, skeins, tubes, cones and Section Beams.

General Office: McCOLL, S. C.

Branch Offices

350 BROADWAY, NEW YORK 400 CHESTNUT STREET, PHILADELPHIA

SWEENEY & COMPANY, Inc.

Crude Rubber

Importers and Traders Building 59-61 Pearl Street

NEW YORK

FOR SALE—

TREAD BANDS

These Bands are slightly blemished, but looks and serviceability are not impaired. NON-SKID—ALL SIZES.

Box 240 Care of THE RUBBER AGE AND TIRE NEWS

Est. 1900 Inc. 1919

THE KUHLKE MACHINE CO.

Formerly Jones & Kuhlke

AUTOMOBILE TIRE MOLDS and CORES

GENERAL MACHINE WORK

Akron, Ohio

A. DAIGGER & COMPANY

Established 26 Years

TALC

Write for Samples and Prices

All Central and far Western Manufacturers will find it to their advantage to get our prices and try our service.

54 West Kinzie St. Dept. 20 **Chicago, Ill.**

T. B. LIEBSTEIN

Buyer of Rubber Machinery of every description, cured and uncured rubber, discarded compound stock, fabric scrap, seconds, chemicals, or any other refuse scrap.

72 Chestnut St., Newark, N. J.

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of *National High Tensile Strength, Flat Woven, Bead Braid or Pratt Bead Rings.* These rings, made under Pratt patents to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt rings (no charge) and full information as to our product and service.

NATIONAL-STANDARD COMPANY

NILES, MICHIGAN

The Hunter Patent Process

The large list of installations is proof of the rapidity with which engineers have recognized the simplicity and merits of the Hunter Patent Process of drying with moist air.

We offer you a simple means of obtaining, not only absolutely dry rubber, but rubber which has been benefited in the drying process.

ASK YOUR FRIENDS ABOUT IT

THE HUNTER DRY KILN COMPANY

Eastern Laboratory, 267 Mt. Pleasant Ave., Newark
Eastern Office, Kinney Building, Newark, N. J.

HOME OFFICE AND LABORATORY
26th Street and Cornell Avenue, Indianapolis, Ind.

MAGNESIA

DOUBLE CALCINED HEAVY
MEDIUM LIGHT CALCINED
LIGHT CALCINED
EXTRA LIGHT CALCINED
CARBONATE

Specially Adapted for the Rubber Trade

GENERAL MAGNESITE & MAGNESIA COMPANY
PHILADELPHIA

THE VULCANIZED RUBBER CO.

Manufacturers of

Hard Rubber Goods of every description

251 FOURTH AVENUE
New York

WORKS MORRISVILLE, PA

IMMEDIATE DELIVERY
and
PROMPT FUTURE SHIPMENTS
on contracts for

SULPHUR

Niagara Impalpable Rubber Sulphur

a specially processed, **Pure, Absolutely Uniform, Exceptionally Fine Sulphur** which is free from grit and foreign matter of any kind.

We are now booking contracts for present and future supplies with concerns who are producers of high quality goods.

"Satisfaction Guaranteed"

NIAGARA SPRAYER COMPANY
MIDDLEPORT, NEW YORK
MANUFACTURERS

CHAS. E. WOOD

BROKER IN

Crude Rubber, Balata, Gutta Percha and Kindred Products

Prompt Attention and Efficient Service to Buyer and Seller Alike

NEW YORK—Tel. Rector 5150, 5151, 5152
Singer Bldg., 149 Broadway
AKRON, OHIO—
Bell Phone, Main 7005-7006-7007
328 Central Savings and Trust Bldg.
CHICAGO, ILL.—Tel., Randolph 4436-37-38
Advertising Bldg., 123 West Madison St.
Cable Address: "CHASEWOOD"

The Tire Machine Drum illustrated is made to fit the new

UNIVERSAL TIRE MACHINE

The W. F. Gammeter Co., Cadiz, Ohio, U. S. A.

Makers of

Universal Steel Calender Stock Shells

Carbon Black — SOAPSTONE — RED OXIDE

Carbonate Magnesia — ACCELERATORS — LITHOPONE

Whiting — ANTIMONY — BARYTES

Rubbermakers' Chemicals, Pigments and Colors

L-K

Laidlaw, Kelly & Co., Inc., 14 Platt St., New York

HARRY SCHWARTZ

Crude Rubber Broker

Rubber Handled on Consignment
Inspecting and Grading

Special Facilities for Serving Pacific Coast Manufacturers

131 GRAND TRUNK DOCK, SEATTLE

Foreign and Domestic Correspondence Solicited

THE RUBBER AGE AND TIRE NEWS

24 COPIES - - - - $2.00 PER YEAR

WANTED

SCRAP STEEL BASED SOLID TRUCK TIRES

We are in a position to handle any quantities of this material

PROMPT ATTENTION *MARKET PRICES*

SACKLER BROS. 427-435 East 102nd St., New York

Stronghold
TIRES & TUBES

The 5000 Mile Tire

THE RUBBER PRODUCTS CO.

Barberton, Ohio

Send us your

CUSTOM RECLAIMING

We make a specialty of frictions.

WRITE FOR PRICES

THE PHOENIX RUBBER CO.

Akron, O.

(Works in East Akron on A & B Belt Ry.)

Index to Advertisers

A

Akron Advertising Agency..... 542
Akron Equipment Co..... 576
Allen Machine Co..... 564

B

Battelle & Renwick..... 539
Biggs Boiler Works Co..... 577
Brander & Curry..... 574
Brighton Mills..... 568
Butcher, L. H. & Co..... 541

C

Canfield, H. O. Co..... 574
Cleveland Rubber Mold Fdy. & Machine Co. 575

D

Daigger, A. & Co..... 570
Devine, J. P. Co..... 565
Diamond State Fibre Co..... 567
Dunbar, Wilmer..... 574
Duncan, J. Co..... 577
Dunning & Boschert Press Co..... 574

E

Essex Rubber Co..... 541

F

Farrel Foundry & Machine Co..... 540
Frazar & Company..... 565
Fulper, Edward B..... 576

G

Gammeter Co., The W. F..... 572
General Electric Co..... 535
General Magnesite & Magnesia Co..... 571
Grant, Watson & Co., Ltd..... 573

H

Harshaw, Fuller & Goodwin Co..... 539
Henderson, F. R. & Co..... 563
Hodgman Rubber Co..... 569
Hunter Dry Kiln Co..... 571
Hyde Mfg. Co..... 539

J

Jenckes Spinning Co..... 567

K

Keystone Tire & Rubber Co..... 575
Kuhlke Machine Co..... 570

WHAT FABRICS

DO YOU USE

IN YOUR BUSINESS?

DO YOU USE

WIGANS
SHEETINGS
CAMBRICS
VOLUTE CLOTHS
INSULATION CLOTHS
DUCKS
TWILLS
SATEENS
PARAMATTAS
CASHMERES
JACCONETS
GAUZE CLOTHS

In fact any kind of Cotton Cloth, whether Grey, Bleached, Dyed or Printed?

IF SO

COMMUNICATE WITH

GRANT, WATSON & CO., LTD.,

10, CUMBERLAND STREET,
MANCHESTER, ENGLAND.

Tel. Addr.—GROUNSHEET, MANCHESTER.

Conclusive Evidence

FLINT SHOT
TRADE MARK - REGISTERED

We have shipped hundreds of carloads of Flint Shot to Pennsylvania, New York, Connecticut, Massachusetts and New Jersey, at a delivered cost very materially higher than that of local Ocean or Bank Sands.

Yet satisfied Eastern customers continue to order because experience has shown them the ultimate economy of Flint Shot per ton of products cleaned.

UNITED STATES SILICA COMPANY

1961 Peoples Gas Bldg. Chicago

FOR SALE—

Approximately 10,000 pounds 24 ounce 56 inch first quality Belting Duck. Immediate delivery.

Box 239 Care of THE RUBBER AGE AND TIRE NEWS.

THE H. O. CANFIELD CO.

MANUFACTURE

Moulded Specialties, Plumbers' Rubber Goods, Valves, Gaskets; Hose Washers, and Cut Washers of all kinds

Write for prices and samples

Office and Works BRIDGEPORT, CT.

WILMER DUNBAR

Consulting Rubber Engineer

GREENSBURG, PA.

BRANDER & CURRY

INCORPORATED

FORTY-SECOND STREET BUILDING
NEW YORK, U. S. A.

SEA ISLAND, EGYPTIAN AND PEELER

TIRE FABRICS

CHAFING STRIPS AND LENO BREAKERS

CORD YARNS AND CORD FABRICS, SHEETINGS AND DRILLS

FOR AUTOMOBILE AND RUBBER TRADES A SPECIALTY

EMBOSSING CALENDERS

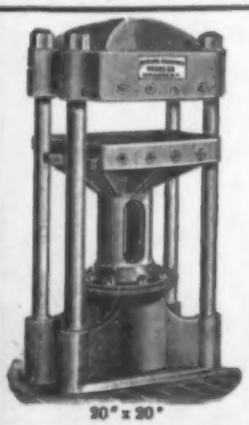
For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.

Office, No. 83 Exchange Place
PROVIDENCE, R. I.



20" x 20"

HYDRAULIC STEAM PLATE PRESS

FOR

Mechanical Goods

Notice air-cooled ram. Long distance between hot steam plate and cylinder packing. Broad foundation, etc. Send for catalogue.

DUNNING & BOSCHERT PRESS CO., Inc.

420 West Water Street
SYRACUSE, N. Y.

EVERY RUBBER MANUFACTURER SHOULD INSTALL

LOXON LAMP GUARDS

— AS —

STANDARD EQUIPMENT

Each guard saves the life of several lamps — both from theft and breakage.

SEND FOR FREE SAMPLE

McGill Manufacturing Co.
Valparaiso, Ind.

Index to Advertisers

Continued

L

Laidlaw Kelly & Co..... 572
Lane, J. H. Co..... 568
Liebstein, T. B..... 570

M

Manhasset Mfg. Co..... 568
Marlboro Cotton Mills..... 569
McGill Mfg. Co..... 574
Miller Rubber Co..... 576

N

National-Standard Co..... 570
National Aniline & Chem. Co..... 563
Niagara Sprayer Co..... 571

P

Phoenix Rubber Co..... 572

R

Rare Metals Products Co..... 569
Rubber Products Co..... 572

S

Sackler Bros..... 572
Schrader's Son, A..... 539
Schwartz, Harry..... 572
Service Rubber Co..... 534
Somerset Rubber Reclaiming Works..... 567
Spadone Machine Co..... 566
Standard Emarex Co..... 537
Sweeney & Co., Inc..... 570

T

Taylor, Armitage, Eagles Co., Inc..... 568
Textile Finishing-Machinery Co..... 574
Turner, J. Spencer Co..... 569
Turner, Vaughn & Taylor Co..... 578
Typke & King, Ltd..... 576

U

United Shoe Machinery Corp..... 564
U. S. Rubber Co..... 533
U. S. Rubber Reclaiming Co..... 532
U. S. Silica Co..... 573

V

Vulcanized Rubber Co..... 571

W

Wellman-Seaver-Morgan Co..... 538
Wood, Chas. E..... 572

MOLDS, CORES
and RUBBER MILL EQUIPMENT

ANNOUNCEMENT

We are now in a position to accept Mold and Core orders for all sizes up to eight inches.

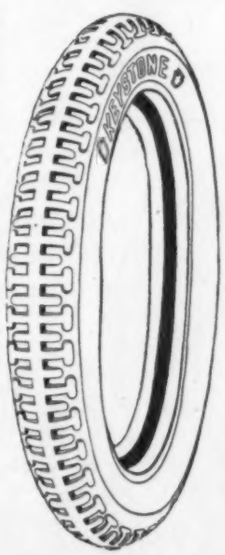
Fabric
Cord
Metric
Solid
Non Skid
and
Ribbed Tread

Inquiries Solicited

THE CLEVELAND RUBBER MOLD FOUNDRY & MACHINE COMPANY
GENERAL OFFICES and FACTORY
CLEVELAND, O.

KEYSTONE TIRES

Guaranteed 6000 Miles



INCREASE your Sales and Profits

Write for our liberal and interesting proposition

KEYSTONE
TIRE & RUBBER CO.
Broadway and 62d St.
NEW YORK

TYPKE & KING, Ltd.,
ESTABLISHED 1883

Head Offices and Works } Crown Chemical Works
Commonside East, Mitcham, England
ESTABLISHED 1883

CRIMSON AND GOLDEN SULPHURETS OF ANTIMONY

Guaranteed Reliable, and Not to Vary, Always Containing Same Percentage of Free Sulphur
Made with any percentage of Free Sulphur desired

BLACK AND WHITE SUBSTITUTES, BLACK HYPO, ZINC SULPHIDE, ETC.

High Grade 320° M. P. Hydro Carbon

30% Lithopone Zinc Oxide (all grades)
Carbonate of Magnesia Whiting
Barytes Caustic Soda Rubber Factice
Antimony Red Oxide Rosin Oil
Cottonseed Oil Aniline Oils Etc.

Edward B. Fulper
Main Office: TRENTON, N. J.

Miller

MANUFACTURERS OF
SURGEONS' SUPPLIES, DRUGGISTS' SUNDRIES, TIRES, BALLOONS, TIRE ACCESSORIES, TUBING, HOSPITAL SUPPLIES, HOUSEHOLD GLOVES, SPONGES, SANITARY APRONS, HOT WATER BOTTLES, ETC., ETC.
THE MILLER RUBBER COMPANY
FACTORY: AKRON, OHIO, U. S. A.
BRANCHES, Distributors and Agents in all principal cities of the United States and foreign countries
LONDON, ENGLAND, BRANCH: A. Siebert, 6 Fann Street

THE AKRON EQUIPMENT COMPANY
C. R. QUINE, *President*

Molds, Cores and Machinery for Tire Makers

AKRON, OHIO

THE RUBBER AGE AND TIRE NEWS
24 copies — One year
Subscription Rates:

Domestic	$2.00
Canadian	2.50
Foreign	3.00

Single Copies . . . . 10 Cents

CLASSIFIED ADVERTISING

10 Cents a word, minimum charge $2.00, payable in advance. Address replies to box numbers, care **THE RUBBER AGE AND TIRE NEWS, 22 East 17th Street.**

WANTED—SALESMAN—To handle Chemicals for the Rubber Trade. Must be thoroughly experienced in this line of work as he will be given entire charge of department. Good salary to start and excellent opportunity for the future. State age, experience and salary desired. The Chas. R. Sargent Co., Engineers Bldg., Cleveland, Ohio.

WANTED—Man capable of taking charge of production of six thousand tires and tubes in capacity of assistant superintendent of factory located in the Middle West. Box 238.

FACTORY DEPARTMENT MANAGER—One with a thorough knowledge of the manufacture of Inner Tubes. To take charge of the department in a rapidly growing Tire Factory located in the vicinity of New York. State experience in detail, age and salary desired in your first reply. All applications treated in strict confidence. Box 241.

FOR SALE OR LEASE—Fully equipped tire and tube factory situated in Middle West; capacity 300 casings per day. First class railroad facilities, plenty of experienced help. Would consider a proposition on a percentage of output basis. Box 242.

TO GET RESULTS—Advertise your needs in the Classified Department of THE RUBBER AGE AND TIRE NEWS.

FOR SALE—Used Machines. Immediately Delivery. Two Standard 1-H Gorton Tire Mold Engraving Machines. These machines have been in use one month. Wilson Foundry & Machine Company, Pontiac, Michigan.